

2  
A goodly Gallery  
A goodly Gallery vvith  
a most pleasant Prospect, into  
the garden of naturall contem-  
plation, to beholde the na-  
turall causes of all kind  
of Meteors.

As well fery and apery, as watry  
and earthly, of which sorte be blasing  
\* \* - Starres, shootinge Starres, flames  
in the ayre &c. thonder, Lightninge,  
Earthquakes. &c. Rayne Dew, snowe  
Cloudes, Springes. &c. Stones,  
Metalles, Earthes. To the  
glozy of God, and the  
profitte of his  
creatures.

¶ PSALME 148.

¶ Prayse the Lord vpon Earth,  
Dragons & all depes, Fyre, Haile  
Snowe, Ise, VVinds, and stormes  
that do his will.

Imprynted at London, in Fleetstreete  
by wylliam Gryffith. 1571.





# TO THE RIGHT

Honorable the Lord Robert Dudley,  
Master of the Queenes maiesties horse,  
Knight of the most Noble order of the garter,  
and one of the Queenes maiesties praiue Coun-  
sell. Wylliam Fulce, wisheth increase of grace  
and heavenly giftes, in perfect health  
and true honour, longe to  
continue.



The most mightie Mo-  
narchie of the Romaine  
Empire Octavius Au-  
gustus, (Right Honora-  
ble Lord) did shewe so  
great liberalitie, or ra-  
ther magnificence towards al them that  
beare him good will, that he also moſte  
largely rewarded sundry persons y had  
fought Hopingayes & other birdes, to *Parrots*  
pronounce some salutation (as he passed  
by them) in his prayse & commendation.  
At the length a poore yong man, alured  
(as it seemed) by his bountifull remun-  
eration of other: had bought a Crowe (an  
vnfowardly byrde) after the same man-  
ner to salute the emperor. Who percei-  
ving his purpose, that it was rather for  
hope of gayne, then testimony of good  
will: answered that he had stowe enough  
already,



## The Epistle.

already, of such saluters at home, meaning those Hoppingayes & other birdes, which at the first for their strangenes, he had dearly payed for. In lyke manner (Right honozable Lord) when I present the salutation of this myne vntowardly byrde, a Crowe in comparison of such pleasaunt Hoppingayes, as haue bene heretofore offered vnto your honozable Lordship: you may haue inst cause of suspicion, that being moued with your former liberalitie & magnificence towards other, I do as the Poet sayeth.

*Occultū cautus de currere piscis ad hamū*

And so if your gentle nature and noble disposition could suffer, as a crauer of vnderferued benefites, to relect both me & my present. But sith my state is such, that I cannot testifie the good wyll of myne heart towarde your honour, otherwise then by such meanes as this: I was bolde to referre that suspicion to the iudgement of your wisdomie & humanity (knowing my selfe cleare from such intent) and to commit this unbeautifull byrde, vnder the winges of your honozable protection, trusting that the same (which I take as a common defence

## The Epistle.

cence of all good learning) shall not on-  
ly at this time be my stay & refuge, but  
also hereafter to moze worthy attempts  
a continual encouragement. But speci-  
ally at this tyme, I was bolde to en-  
terpryse the matter, so that one James  
Rowbothum, a man of notable impudēs  
(that I saye) no worse of him abusinge  
your singular humanitie and gentlenes  
expresseing therample of one Bathillus, or  
rather (that I may continue in the alle-  
gory of birdes) of Esopes crowe, hath not  
ben ashamed to dedicate vnto your Lord-  
ship of late a treatise of myne, which I  
gathered out of diuerse wryters, concer-  
ning the Philosophers game: notwithstanding  
he was streightly commaunded to  
the contrary by the right honorable and  
reuerent father, my Lord of London, of  
whom also I was exhorted and encour-  
aged to dedicate the same vnto your ho-  
nour, my selfe. Which though now  
through his importunitie & disobedience  
it be intercepted, and the booke defaced  
with his rude rymes and peuisish verses:  
yet I thought best to geue your Lord-  
ship vnderstanding that your honorable  
protection which is and should be the de-  
fence of



## The Epistle.

fence of learning & larned men, might  
no moze be a boldening to such ignozant  
and vnbonest persons. And likewyse  
most humbly to desire your honour that  
though myne Epistle dedicatoze, be not  
annered to that boke yet considering by  
what pertinacitie I was hindered, you  
would accept that booke also together  
with this, as an homely pzeent of mine  
of which I may conclude as one dyd in  
lyke case.

*Idū ego cōposui librū, tulit alter honorē  
Sic vos non vobis lacte tumetis oues.*

*Sic vos non vobis præda agit ampla canes*

*Sic vos non vobis conditis antra feræ,*

*Sic vos non vobis pondera fertis equi.*

Thus sparing to trouble your honoz  
any longer, either with complaint oz  
excuse, I desire almightie God to mul-  
tiplie his blessinges towarde you, that  
abounding in all good gistes both

bodely and ghostly, you maye

haue longe lyfe in health

and honour, to his

gloze, the profit of

other, and your

endles com-

fozte A.

men.

## The first Booke.



As much as we entend  
in this treatise, to declare y  
causes of all those bodyes,  
that are generatede in the  
earthe, called *Fossilia*, as  
well as thos other *Impressio*  
*nes*, named of ther height, *Meteora* (which  
no wypter hetherto hath done, y we haue  
sene) the comen definieion gyuen by most  
wypters, in no wyse wyll serue vs, & whe  
ther we maye bozowe y name of *meteoron*  
to compzehende the whole subiect of oure  
worke we are not all together out of do  
ubt, all though y philosopher, derpyinge  
it from doutfullnes, geueth vs som colloze  
so to take it, and paduenture we myght be  
as wele excused to aplye it to *mineralls*, as  
other auters ar to vse it for earthequakes;  
yet to auoyde all occasions of cauellynge  
at wordes, we shall bothe defyne and also  
describe the subiect of oure matter on thys  
manner: yt is a body compounde with out  
lyfe naturalle: and yet to stoppe one hole,  
because heare wanteth y name of y thinge  
to be definede, yt is no newe thinge, to  
them that haue redde *Aristoteles* *worke* *Aristot-*  
to fynde a diffinition, of that whereof ther les.



is no name. But what nede you be so p:ed  
tise (wil some man say) mean you so to p:ro  
reade in all your discourse? no verely, but  
because many of quicke iudgement not cō  
sidering the stile to be attempered, to the ca  
pacitie of the Readers, will impute the  
plaines to the ignoraunce of the authoꝝ,  
we thought good in y beginning to pluck  
that opinion out of their mindes (that as  
the cōmon saying is) they may know we  
haue skill of good maners though we litle  
vse them.

These meteozs are deuided after thze ma  
ner of ways, first into bodies pfectly & imp  
fectly mixed. Secondly into moist impres  
sions & drie. Thirdly into fiery, aery, watery  
and earthly. According to this last diuisiō,  
we shall speake of them in folowe bookes  
followyng. But first, we must be occupied  
alittle in the general descriptiō of the same,  
y afterward shalbe particularly intreated  
of. ¶ Why they be called vnperfectly mixed.

**T**hey are called vnperfectly mixed, be  
cause they are very sone chaūged into  
another thing, and resolued into their  
proper elementes of whiche they do moſte  
consist, as do all impressious, fyre, ayre,  
watrie, as snowe into water, cloudes into  
waters

Waters. &c.

*¶ Why they be called perfectly mixed.*

The last sort namely earthly, Meteores are called perfectly mixed, because they will not easely be chaunged and resolued from that forme which they are in, as be stones, metalles and other mineralles.

According to the qualitie of the matter, they are diuided into moist & drie impressions, consisting either of vapores or exhalations. vapores are called moist, and exhalations drie, whiche termes must be well noted, because they must be much vsed.

*¶ Of the general cause of all Meteores and first of the materiall cause.*

The mater whereof the moste part of the Meteores dooth consist, is either water or earth, for out of y<sup>e</sup> water, proceade vapors, and out of the earth come exhalations.

Vapor as the Philosopher sayeth, is a certain watric thing, and yet is not water, so exhalation hath a certain earthly nature in it, but yet it is not y<sup>e</sup> earth.

For the better vnderstanding of vapors, vnderstande that they be as it were fumes or smokes, warme & moist, whiche will easely be resolued into water, muche like to the bzeath that proceadeth out of a

A. ij. mans



What the  
middle re-  
gion is  
shal be  
colde af-  
terward.

mans mouth, or out of a pot of water stand-  
ding on y<sup>e</sup> fire. These vapors are drawen  
vp from the waters and watry places, by  
the heate of the Sunne, euen vnto the  
middle region of the ayre, and there after  
diuerse maner of meating with coldnes,  
many kynde of moist Meteors are genera-  
ted, as sometime cloudes and rayne, some-  
time snowe and hayle, and that suche va-  
pors are so drawen vp by the Sunne, it is  
playne by experie<sup>n</sup>ce: for if there be a plash  
of water on a smothe and hard stone, stan-  
ding in the heate of the sunne, it wyl soone  
be drye, whiche is none other wyse, but y<sup>e</sup>  
the sonne draweth vp the water in thynne  
vapores, for no man is so fonde to saye, that  
it can sink into stone or metall, and it  
is as great folly to thinke, it is consumed to  
nothyng: for it is a general rule, that that  
whiche is once a thing, can not by chaun-  
ging become nothyng, wherefore it follo-  
weth that the water on the stone, as also  
on the earth, is for the moste part drawen  
vp, when the stone or earth is dried.

A gene-  
all rule.

What ex-  
halations  
bee.

Exhalations, are as smokes that be heat  
and drye, whiche because they be thynne, &  
lygther then vapors, passe the lowest and  
middle region of the ayre, and are caried vp  
euen to the highest region, where for the  
excessive heat, by nearenes of the fier, they

are kindled, and cause many kinde of impressions. They are also sometimes *viscoses*, that is to say clamy, by reason wherof, they clewing together & not being dispersed, are after diuerse sortes fet on fier, and appeare somtims like Dragons, somtims like Goats, somtims like cādels somtims like speares.

By y<sup>e</sup> which is spokē of vapors & exhalations, it is euident y<sup>e</sup> out of y<sup>e</sup> fier & the ayer no matter wherof *meteores* shold consist can be drawē, because of their subtiltie & thinnes. For al exhalatiō is by making a grosser body more thinne, but y<sup>e</sup> fier (we mean y<sup>e</sup> elemental fier, & not the fire of the kitchē chimney) is so subtil & thin, y<sup>e</sup> it cannot be made thinner: likewise the ayre is so thin, y<sup>e</sup> if it be made thinner, it is chāged into fire, & as the fire if it wer made thicker, wold becom airc, so the airc, being made grosser, wold be turned into water. Wherfor to cōclude this part, y<sup>e</sup> great quantitie of matter, that causeth these *meteores*, is takē out of y<sup>e</sup> earth and the water. As for y<sup>e</sup> airc & the fire, they are mixed with this matter as with al other things, but not so abundantly, that they may be sayd the material cause of any *Meteor*, though without them none can be generated. The efficient cause of all *Meteores* The efficient cause is that cause, whiche maketh them, euen as the



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as the Carpenter is the efficient cause of an house. This cause is ether first or second.

The first and efficient cause is god, the worker of all wonders, accordinge to that testimony of the Psalmist, whiche sayeth. Fier, haile, snowe, yse, wynde and stones, do his will and commaundement, he sendeth snowe lyke woll, &c. Almightye God therfore beinge the firste, principall and vniuersall cause efficiente of all naturall woakes and effectes, is also the first cause of these effectes, whose profit is great, and operation maruelous.

The second cause efficient, is double, either remote that is to saye, farre of, or next of al. The farther cause of them as of all other natural effectes, are the same, the sonne, with y other planetes and sterres, and the very heauen it selfe in which they are moued. But chiefly, the Sunne by whose heate all or at lest wyse, the moste part of the vapors and exhalations are drawen vp.

The next causes efficient as the first qualities, ar heate and colde, whiche cause diuerse effectes in vapors and exhalations, but to retorne to the heate of the Sunne, whiche is a very neare cause, it is for this purpose

purpose two wayes considered.

One waye, as it is meane & temperate

Otherwise, as it is behemēt & burning

The meane, is by whiche he draweth vapors out of the water and exhalations out of the earth, and not onely draweth them out, but also listeth them vp very high frō the earth, into the ayer, where they are toynd into diuerse kinde of *Meteores*.

The burning heate of the Sunne is, by which he burneth dissipateth and consumeth the vapors, and exhalations befoze he draweth them vp, so that of them no *Meteors* can be generated.

These two heates, proceade from the Sunne either in respect of the place, or the tyme, but mooste properly according to the casting of his beames either directly or indirectly.

In places where the Sunnes beames strike directly against the earth, and the water, the heat is so great, that it burneth vp the exhalations and vapors, so that there are no fiery *Meteors*, muche lesse watery as it is in the South partes of the world, vnder and neare to the Equinoctiall lyne.

But in places where the beames are cast indirectly, and obliquely, & that where they



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they are not too nigh to the direct beames,  
nor too farre off from them: there is a mo-  
derate heate, drawing out great aboun-  
dance of matter, so that in those contries,  
many *Meteores* of many sortes as genera-  
ted, as in the farre North partes are few,  
but wattrie impressions. Also in *Autumne* &  
*Springe*, are oftener *Meteores* seen, then in  
*Summer* and *Winter*, except it be in such  
places, where the *Summer* and *Winter*  
are of the temper of *Spring* and *Autūne*.  
Let this be sufficient, for the efficient cau-  
ses of impressions, as well first and princi-  
pall, as second and particular. Concerning  
the formall and finall cause, we haue litle  
to saye because the one is so secret, that it  
is knowen of no mā, y other so euident y it  
is playne to all men The essentiall forme  
of all substances, Gods wisdomē compre-  
hendeth, the vniuersall chiefe and last end  
of all thinges, is the glory of God. Wyde  
endes (if they may be so called) of these im-  
pressions are manifold pofites, to Gods  
creatures, to make the earth fruitfull, to  
purge the ayre, to sett forth his power, to  
threathen his vengeaunce, to punyshe the  
woylde, to moue to repentaunce: all the  
which are referde to one end of Gods eter-  
nall glory, euer to be prayesed. Amen.

Of the places, in whiche they are generated.

The places in whiche Meteors are caused, be either the ayre or the earth, in y<sup>e</sup> aire be generated rayne, hayle, snow, dew, blasing starres, thonder, lightning &c. In the earth be welles, springs, earthquakes, metals minerals, &c. made, and as it were in their mothers belly begotten & fashioned. But for the better vnderstanding hereof, such as haue not tasted y<sup>e</sup> principles of Philosophie, must consider y<sup>e</sup> ther be iij. elements, Earth, water, Ayre, & Fire, one compassing another round about, sauing y<sup>e</sup> the waters by Gods commaundement are gathered into one place, y<sup>e</sup> the land might appeare. The highest is y<sup>e</sup> spere of the fire, which toucheth the hollownes of the firmament heauen, the next is the ayre, whiche is in the hollownes of the fyre, the ayre within his hollownes, comprehendeth the water and the earth, whiche bothe make but one *Sphere* or *Globe*, or as the common sort may vnderstande it one *Ball*. So eche element is within another as y<sup>e</sup> scales of a perle, or on aboue another, or (to vse a grosse similitude) as y<sup>e</sup> picles of an onion, or one within another, after y<sup>e</sup> same sort fro y<sup>e</sup> highest heuē to y<sup>e</sup> earth, y<sup>e</sup> is lowest, one part y<sup>e</sup> is greater compasseth

A. b.

round



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told about another that is lesser. But for  
 this present purpose it is to be known, &  
 what the the ayer is divided into thze regions, & by  
 regions of the highest, the middle, and the lowest. The hy-  
 the aire be ghest, because it is next to the region of &  
 fier, is exceeding hoate, the lowest beinge  
 next the earth and the waters, is tempe-  
 rat, and by repercussion or striking back of  
 the sunne beames wareth hoate, and by  
 absence of them is made colde, being sub-  
 iect to Wynter and Sommer. The middle  
 region of & ayze, is always exceeding cold,  
 partly because & sonnebeames, can not be  
 cast back so highe, and partly because the  
 cold that is there, betwene & heate aboue  
 and the heate beneath it, is so kept in that  
 it can not get out, so that it must nedes be  
 excessiuely colde. For the water and the  
 earthe being both colde elementes, after  
 the sunnesetting in the nighte season doe  
 coole & aire, even to the middle regiō. But in  
 the morning the sunne rising warmeth &  
 ayze, so farre as his beames whiche are  
 beaten back from the earth & the water,  
 can extende and reache, whiche is not so  
 highe as the middle region, and by heate on  
 both sides, is inclosed and kept, sauing that  
 a litle thereof falleth downe in the night,  
 which

which the next day with much more is driuen backe againe. Wherefoze this region being so colde, is darke and cloudey, in so much that some doting Diuines haue imagined, purgatorie to be there in the mydle region of the ayre.

In the hyghest region, be generated Cometes or blasing starres, and suche lyke of diuerse sortes.

In the middle region cloudes, rayne, stormes, wyndes, &c. In the lowest region, dewe, frost, hoarefrost, mistes, bygght rods, candels burning about graues, & gallowses, where ther is store of clammy fatty or oily substance, also lightes and flammynge fiers, sene in fieldes, &c.

¶ And thus muche for the generall causes of all Meteores.



A GOODLY  
The seconde Booke  
of fyery Metcotes,



Fiery impression, is an exhalation sett on fire, in the highest or lowest region of the ayre, or els appearing as though it were set on fire and burning.

They are therfore diuided into flames and aparitions. Flames are they, whiche burne in deade and are kindled with fire. These are discerned by iiii. wayes, by the fashion of them, by their place, by the abundance of their matter, & by the wante of their matter. Their placing is after the abundance & scarsetie of the matter wher of they consist, for if it be great, heauie and grosse, it cannot be caried so farre as the mydle region of the aire, and therfore is set on fire in the lowest region, if it be not so great, light, and full of heat, it passeth the mydle region & ascendeth to the highest, where it is easely kindled & set on fire.

According to their diuerse fashions, they haue diuers names, for they are called, burning stoble, torches, daunsing or leaping Coates, shooting or falling starres, or candles,

beles, burning beames, round pillars, spears  
 sheldes, globes or bowles, fierbrandes,  
 lāpes, flying dragons or firedrakes, pointed  
 pillores or bꝛoched steples, or blasing stars,  
 called *Cometes*. The time whē these impres-  
 sions doth most apere, is y night season, for  
 if they were caused in y day time, they cold  
 not be seen, no more then y starres be seen,  
 because the light of y sunne which is much  
 greater, dimmeth y brightnes of thē being  
 lesser.

¶ Of the generation of the impression, called  
*burned stoble or sparkles of fire.*

The generation of this *Meteore* is this, *Sparkes*  
 whan the matter of the *Exhalation* is in of fyre.  
 all partes a lyke thynne, but not compac-  
 ted or knit together, then some parte of it  
 being caried vp into the highest region, by  
 the fiery heate is set on fier befoze another  
 part, that cometh vp after it, and so be-  
 ing kindled by lytle and lytle, it flyeth a-  
 bꝛode lyke sparkles out of a chymney, in  
 so much that the common people suppose,  
 that an infinit number of starres fal down  
 where as it is nothing els, but the *Exhala-*  
*tion* that is thinnie kindled in many partes,  
 sparkling as when sawe dust or cole dust  
 is cast into the fyre.

Of



# A GOODLY

## ¶ Of Torches.

Torches.

**T**orches or fyre brandes, are thus generated: when the matter of the exhalation is long and not broad, being kyndled at one end therof, in the highest region of the ayre, it burneth lyke a Torch or fyre brande, and so continueth, till all the matter be burned vp, and then goeth out, none otherwyle then a Torch when all the stuffe is spent must needs burne no longer.

## ¶ Of danfing or leaping Goates.

Danfing  
Goates.

**D**anfing Goates, are caused when the exhalation is diuided into two partes, as when two torches be seen together, & the flame appeareth to leape or daunce from one parte to the other, much lyke as balls of wyld fyre daunce vp and downe in the water.

## ¶ Of shotyng and falling Starres.

Shooting  
Starres.

**A** Flying, shooting, or falling Starre, is when the exhalation being gathered as it were on a round heape, and yet not thoroughly compacted in the hyghest parts of the lowest region of the ayer, beyng kyndled, by the sudden colde of the mydle region is beaten backe, and so appeareth as though a Starre should fall, or flyde from place to place. Sometyme it is generated  
after

after another sort, for there is an exhalation long and narrow, which being kindled at one end burneth swiftly, the fyre running from end to end, as when a silke thread is set on fyre at the one end. Some saye it is not so much set on fyre, as that it is direct vnder some Starre in the firmament, and so receiuing light of that starre, semeth to our eyes to be a starre. In deade some times it may be so, but that is not so alwayes, nor yet most comenly, as it may be easely demonstrated. *The Epicurians as The Epicurians opinion.* they are verie grosse in determining the chief goodnes, so they are very fonde in assigning the cause of this Meteor. For they say, y the starres fall out of the firmament, and that by the fall of them, both thonder and lyghtning are caused: for the lightening (say they) is nothyng els but the shyning of that starre that falleth, which falling into a watrye clowde, and being quenched in it, causeth that great thonder, euen as whoat yron maketh a noyce if it be cast into colde water. But it is euident that y *Psal. 146* starres of the firmament can not fall, for 3, 6 God hath set them fast for ever, he hath geuen them a commaundement which they shal not passe. And though they shold fall



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fall into the cloude, yet could they not rest there; but with their weyght being dryuen downe, would couer the whole yearth.

*The greatnes of  
Staires.*

For the least starre that is seen in the firmamēt, is greater then all the earth. Here wyl steppe forth some mery fellow, which of his conscience thinketh them not to bee aboue thre yardes about, and saye it is a loude lye, for he can see within the cōpasse of a bushell more the xx. starres. But if his bushell were on fyve xx. myle of, I demaunde how bygge it would seem vnto him? He that hath any wyt, wil easely perceiue, that starres being by al mennes confessiō, so many thousand myles distant from the earth, must needes be very great, that so farre of should be seen in any quantitie. Thus muche for the shooting or fallynge starres.

*A profe  
of the stars  
greatnes.*

## Of burnynge Candel.

*Burning  
candels.*

When the Exhalation caried vp into the hyghest part of the ayre is in al partes thereof of equall and lyke thynnes, & also long, but not broade, it is set on fyve and blased lyke a candle, vntyll the Exhalation be quite consumed.

*Burnynge  
beames &  
round pil-  
lers.*

## Of burning Beames and round Pillers.

These are caused, when the Exhalation being

being long and not very broad, is sett on fyre, all at once and so burneth lyke a great beame or logge. The difference of beames and pyllers is this, for beames are when they seeme to lie in lengthe, in the ayre, but they are called pyllers, when they stande right vp, the one end nearer to the earth, then the other.

¶ Of burning Spears.

Burning spears are generated, when a great quantitie of Exhalations, which may be called a drie cloude, is set on fire in the myddest, and because the cloude is not so compacte, that it shoulde suddenly rende, as when thonder is caused, the fyre breaketh out, at the edges of the cloude, kindlyng the thynne Exhalations, which shoot out in great number lyke fyre spears, or darts, longe and very small, wherfore they continue not long, but whē they fayle, within a short whyle after, more fyre breakynge out, they shoot out as many more in their place, and lyke wyse, whē they are gone, other succede, if the quantitie of the matter wyll suffice, more then a dosen courses. This impressiō was seen in London, Anno dom. 1560. the thirty daye of

Burninge  
Speares

B. j.

January



January, at eight of the clocke at night, the ayer in all other places beyng very darke, but in the south east where this cloude burned, it was as lyght as when the daye breaketh, towarde the Sunne ryng, in so much, that playne shadow of thyngs opposite, was sen. The edge of this cloude was in fashion lyke the Raynbowe, but in collour very bryght, and often tymes casting forth almoste innumerable dartes, of wonderfull length lyke squybbes, that are cast vp into the ayre, saying y they moued moze swiftly then any squybbes.

¶ Of Shieldes Globes or Bowles.

Shieldes  
Globes or  
Bowles.

These Meteores also haue their name of their fashion, because they are broad, and appeare to be rounde, otherwyle their generation differeth not fro the cause of the lyke impressions befoze mentioned.

¶ Of Lampes.

Lampes.

The lampe consisteth of an Exhalation, y is broade & thick, but not equally extended, namely smaller at one end then at another, which being kindled about y middell therof, burneth like a lape. The cause why, as wel this impressio, as many other, apeareth round, is not for y alwayes they ar round in deede, but because

the great distance causeth thē to seem so. For euen square formes, farr of seem to be round. It is witten, y a lāpe fel down at Rome whē Germanicus Cesar, set forth the sight of sword players.

¶ Of flying Dragons or fyre Drakes.

FLYING Dragons, or as Englyshmen call thē fire drakes, be caused on this maner. Whē a certen quātitie of vapors ar gathered on a heape, being very near cōpact, & as it wer hard tēpered together this lōpe of vapors assending to y region of cold, is forcibly beaten backe, whiche violence of mouing, is sufficient to kindle it, (although som men will haue it to be caused betwene y. cloudes a whote & a cold) thē y highest part, which was climbing bpward, being by reason moze subtil & thin, apeareth as y Dragons neck, smokig, for y it was lately in the repuls bowed or made crooked, to represent the dragōs bely. The last part by y same repulse, turned bpward, maketh y tayle, both apearig smaller, for y it is farther of, & also, for y the cold bindeth it. This dragō thus being caused, flyeth alōg in y ayre, & sōtime turneth to & fro, if it meet w a cold cloud to beat it back, to y great

*Flyinge  
Dragons  
or fyre  
Drakes.*



# A GOODLY

terro<sup>r</sup>, of them that beholde it, of whom  
some called it a fyre Drake, some saye it  
is the Deuill hym selfe, and so make re-  
port to other. More then sirtene yeares  
ago, on May daye, when many younge  
folke went abroade early in the mo<sup>r</sup>-  
nyng, I remember, by fyre of the clocke  
in the fozenone, there was newes come  
to London, that the Deuill the same  
mo<sup>r</sup>nyng, was seene flyinge ouer the  
Temmes: after ward came worde, that  
he lyghted at Stratforde, and ther was  
taken and sett in the stockes, and that  
though he would fayne haue dissembled  
the matter, by turning hym selfe into  
the likenes of a mā, yet was he knowē  
welinough by his clouen feet. I knowe  
some yet aloue, that went to see hym, &  
returning affirmed, that he was in deed  
seen flying in the ayre, but was not ta-  
ken prysoner. I remember also that som  
wished he had been shot at with gons,  
o<sup>r</sup> shaftes as he flewe ouer the Temmes.  
Thus do ignorant men iudge of these  
thynges that they knowe not, as for  
this Deuill, I suppose it was a flyinge  
Dragon, wherof we speake, very feare-  
full to loke vpon, as though he had life,  
because

because he moueth; where as he is nothing els but cloudes & smoke; so mightie is God, that he cā feare his enemies, with these and suche lyke operations, whereof some examles may be founde in holy scripture.

¶ Of the Pyramidall pyller lyke a spire  
or broched steeple.

This sharpe poynted piller, is genera- *Of spires.*  
ted in the hyghest region of the ayre,  
and after this sort. When the *Exhalatio*  
hath much earthly matter in it, the ligh-  
ter partes and thinner (as their nature  
is) ascending bpwarde, the grosser, hea-  
uier, and thyecker, abyde together in the  
bottome, and so is it of fashon great be-  
neath, and small pointed aboue, and be-  
ing set on fire it is so seē, and thereof  
hath his name.

¶ Of Fyre scattered in the ayre.

Fyre scattered in the ayre, or illumina- *Fyre sca-*  
tions, are generated in the lowest re- *tered,*  
gion of the ayre, when very drye and  
whote *Exhalations*, are drawen bp and  
meeting with colde cloudes, are sent  
back agayne, which motions setteth thā  
a fyre, whose partes, being not equally  
thyecke or ioyned together, seeme as  
though



## A GOODLY

though fyre were scattered in the ayre.   
 ¶ Sea sometimes, the whole ayre seemeth   
 to burne, as though it would raine fyre   
 from heauen, & so it hath come to passe,   
 burning both cities and towne. Then   
 iudge, how easy it was for God to raine   
 fire vpon Sodome and Gomor, for their   
 sinnes and wickednes.

¶ Of lightes that goeth before men, and follow   
 eth the abroad in the fields by the night season.

*Light that  
goeth be-  
fore men  
and follow  
eth the in  
the night.*

There is also a kind of light, which is seen   
 in the night season, & seemeth to goe   
 before men, or to followe them, leading   
 them out of their waye vnto waters, &   
 other dangerous places. It is also very   
 often seen in the night, of the that sayle   
 in the Sea, & sometyme will cleaue to the   
 mast of the shyp, or other highe partes.   
 Sometyme flyde round about the shyppe,   
 and either rest in one part till it go out,   
 or els be quenched in the water. This   
 impression seen on the lande, is called in   
 latin, *Ignis fatuus*, foolish fyre, that bur-   
 teth not, but only feareth foules. What   
 whiche is seen on the Sea, if it be but one,   
 is named *Helena*, if it be two, it is called   
*Castor and Pollux*.

The foulishe fyre, is an *Exhalation*   
 kindled

kindled by meanes of violent moving,  
 when by cold of the night, in the lowest  
 region of the ayre, it is beaten downe, &  
 then commonly, if it be light, seeketh to  
 ascende upward, & is sent down againe,  
 so it danseth bp & downe. Els if it moue  
 not bp and downe, it is a great lombe of  
 glueysh or oyle matter, that by moving  
 of the heate in it selfe, is enflamed of it  
 selfe, as moyst haye wll be kyndled of  
 it selfe. In whote and fenny countries,  
 these lyghtes are often seen, and where  
 as is abondance of suche vntuus and  
 fat matter, as about churchyardes wher  
 through the corruptiō of the bodies ther  
 buried, & earth is ful of suche substance,  
 wherfoze in churchyardes, or places of  
 cōmon buriall, oftentimes ar such ligh-  
 tes seen, which ignorant & superstitious  
 soles, haue thought to be soules tormē-  
 ted in the fyre of purgatorie. In dede &  
 deuill hath bled these lightes (although  
 they be naturally caused) as strong delu-  
 sions to captiue the myndes of men, w<sup>ch</sup>  
 feare of the Popes purgatorie, wherby  
 he did opē iniury to the bloud of Christ,  
 which only purgeth vs frō al our synnes  
 and deliuereth vs from al tormēts, both



tempozall and eternal, according to the saying of the wyse mā, the soules of the ryghteous are in the hands of God, and no tormēt toucheth them. But to retorne to the lightes in whiche, there are yet two thinges to be considered. First, why they leade men out of their waye. And secondly, why they seeme to follow men and go before thē. The cause why they leade men out of the waye, is, that mē whyle they take hede to such lights, and are also soze astrayde, they forgett their waye, and then being ones but a litle out of their waye, they wader they wote not whether, to waters, pyttes, & other very daungerous places. Which, when at lengthe they happe the waye home, wylt tell a greate tale, how they haue been lead about by a spirite in the lykenes of fyre. Nowe the cause why they seeme to goe before men, or to followe them, some men haue sayde to be the moving of the ayer by the goyng of the man, which ayer moued, shold drawe them forwarde if they were before, and drawe them after, if they were behynd. But this is no reason at all, that the fire which is oftentimes, thye or fowre miles distant

distaunt from the man that walketh,  
 shold be moued to and fro by that ayze  
 which is moued thzough his walkinge,  
 but rather the mouing of the ayze & the  
 mans eyes, causeth the fyze to seeme as  
 though it moued, as the Moone to chyl-  
 dren seemeth, if they are befoze it, to run  
 after them: if she be befoze them, to run  
 befoze them, that they can not ouertake  
 her, though she seeme to be very neare  
 them. Wherfoze these lyghtes rather  
 seeme to moue, then that they be moued  
 in deade.

¶ Of Helena, Castor and Pollux.

V Vhen the lyke substaunce in the lo, *Helena,*  
 west region of the ayze, ouer the *Castor,*  
 sea by the lyke occasion is set on fyze, if *Pollux.*  
 it be one onely, it is called *Helena*, if ther  
 be two, they ar called *Castor* and *Pollux*.  
 These impressiōs will oftentimes cleue  
 to the masse & other partes of the ships,  
 by reason of the clammynes and fatnes  
 of the matter, *Helena* was of the Heathē  
 then, taken as a Goddesse the daughter  
 of *Jupiter* and *Leda*. *Castor* & *Pollux*, were  
 her brethren. *Helena* was the occasion y  
 Troy was destroyed, therfoze the Ma-  
 riners by experience tryinge that one  
 flame



flame of fyre apeareng alone, signified  
 tempest at hand, supposed the same flame  
 to be the goddesse *Helena*, of whom they  
 looked for nothing but destruction. But  
 when two lightes are seen together, they  
 are a token of sayre wether, & good luck,  
 the Mariners therfore beleued, that they  
 were *Castor* and *Pollux*, whiche sayling  
 to seeke their syster *Helena*, beyng carried  
 to *Troye* by *Paris*, were neuer seen af-  
 ter, and thought to be translated into  
 number of the Gods that gyue good suc-  
 cesse to them that sayle, as we reade in  
 the last chapter of the Actes of the Apo-  
 stles, that the shyppe wherein *S. Paule*  
 sayled, had a badge of *Castor* and *Pollux*.  
 A natural cause why thei may thus fore-  
 shewe either tempest or calmnes, is this.  
 One flame alone may geue warning of  
 a tempest, because that as the matter  
 thereof is compact, and not dissolved, so  
 it is lyke, that the matter of tempeste  
 (whiche neuer wanteth) as wynde and  
 cloudes, is styll together, and not dis-  
 sipated, then is it lyke not long after to  
 aryse. By two flames together, may be  
 gathered, that as this *Exhalation* whiche  
 is very thicke is diuided, so the thicke  
 matter

matter of tēpest is dissolued & scattered  
abroade by the same cause that this is di-  
vided. Therfore not without a reason,  
the Mariner to his mates may promise  
a prosperous course.

**O**f flames that apeare vpon the heares  
of men or beastes.)

**T**here is yet another kynde of fyre in *Flames*  
pression, which is flames of fire vpon *vpō heares*  
the heares of men and beastes, especially *of men &*  
horses. These are sometime clāmy *Ex-*  
*halations*, scatered abroad in the ayre in  
small partes, which in the night by re-  
sistance of the colde, are kindled, clea-  
uyng on horses eares, on mens heades  
& shoulders that ryde or walke. In that  
they cleaue vpō heares, it is by the same  
reason, that the dewe wyll be seē also  
vpon heares or garmentes, whose woll  
is hyghe, as frysse mantels and such  
lyke. Another sorte of these flames, are  
caused, when mens or beastes bodies be-  
ing chaffed, sed forth a fat & clāmy sweet,  
which is in like maner kindled as y<sup>e</sup> spar-  
kes of fire y<sup>e</sup> ar seē when a black horse is  
curred. *Linus* reporteth of *Servius Tulli-*  
*us*, y<sup>e</sup> as he lay aslepe, being a childe, his  
heare seēmed to be all on a flame, which  
for all

*Linus.*  
*Servius*  
*Tullius.*



# A GOODLY

*Marins.*

for all that did not burne his heare, nor hurt him. The lyke historie he reciteth of one *Marins*, a knyght of Rome, that as he made an oration to his Souldiours in Spaine, they sawe his head burning on a lyght fyre, & he hym selfe not ware of it. Thus muche concerning these flames.

## ¶ Of Comets or blasynge Starres.

*Comets or blasynge starres.*

A Comet is an Exhalation, whote & drye, of great quantitie, fat and clammye, harde compacte lyke a greate lompe of pitche, which by the heate of the sunne, is drawen out of the earth, into the hyghest region of the ayre, and there by excessive heat of the place, is set on fire, appearing lyke a starre with a blasynge tayle, and sometyme is moued after the motion of the ayre, whiche is circuler, but it neuer goeth downe out of the compassse of syght, thought it be not seen in the daye tyme for the bryghtnes of the sunne, but styll burneth vntyll all the matter be consumed. An argument of greatness is this, that there was neuer any Comet yet perceyued, but at the lest it endured seuen dayes, but much longer they haue bene seen, namely fortye dayes

dayes long, yea, lxxx. dayes, and some  
 fyre moneths together. Wherfore, it  
 must needs be a wonderfull deale of  
 matter, that can gyue so much noyse  
 ment, for so great and feruent fyre, and  
 for so long a tyme. There are consyde-  
 red in a Comet, specially the colour & fa-  
 shion, which both aryse of the dispositiō  
 of the matter. Their collours, be either  
 whyte, ruddy, or blew. If the matter  
 be thynne, the colour is whyte. If it be  
 meanly thicke, then is the Comet ruddy,  
 after the colour of our fyre, but when  
 the matter is very thicke, it is blew,  
 lyke the burning of Brynstone. And as  
 the matter is more and lesse, after this  
 disposition: so is the Comet of colour,  
 more or lesse lyk to these thre principall  
 collours, some yello whyte, some duskysh,  
 some grenishe, some watchet &c.

In fashion are noted thre differēces,  
 for eyther they seeme round, w<sup>ch</sup> beames  
 round about, or with a beard hangyng  
 downward, or els with a tayle stretched  
 out syde long, in lengthe. The first fa-  
 shion, is when the matter is thickest in  
 the myddest, and thynne rounde about y<sup>e</sup>  
 edges. The seconde is, when the Exha-  
 lation



The tem-  
per of the  
4. quar-  
ters.

tion is bpwarde thicke, and in lengthe  
downewarde also, meanly thicke. The  
third forme is lyke the seconde, saynge  
that the taylor hangeth not downe, but  
lyeth aspe, & is commonly longer then  
beard. The tyme of their generation is  
oftenest in *Autumne* or harvest. For in  
the spring, there is to muche moysture,  
and to lytle heate, to gather a *Comet*. In  
summer, is to muche heate, whiche will  
disperse and consume the matter, that it  
can not be ioyned together. As for wynter,  
it is cleane contrary to the nature of  
a *Comet*, which is whoat & drey, wynter  
being cold and moyst, therefore no tyme  
so meet as *Autumne*.

The signi-  
fication of  
*Comets*.

Now for so muche as many learned  
men, have gone about to declare the sig-  
nification of blasing starres, we will o-  
mit nothing y hath any shadowe of rea-  
son, but declare what is wyrtten of the.

Such things as are set forth of y be-  
tokening of *Comets*, are of two sortes: the  
first is of naturall, the second of civile or  
politike effects. They are sayd to betoken  
drought, barynes of y earth & pestilence.

Drought, because a *Comet* can not be  
generated without great heat, & muche  
moisture

moisture is consumed in y<sup>e</sup> burning of it.

Barrennes, because y<sup>e</sup> fatnes of y<sup>e</sup> earth,  
is drawe bp, wherof the Comet consisteth.

Pestilence, forsomuch as this kynd of  
Exhalations, corrupteth the ayre, whiche  
infecteth the bodies of men & beastes.

The second sort, might wel be omit-  
ted, saving y<sup>e</sup> Aristotle him selfe, disday-

neth not to seeke out causes for some of *Aristo.*  
them. Generally it is noted of all histo-

riographers, that after the appearing of  
Comets, mooste comenly followed, great &

notable calamities. Beside this, they be  
token (sayth some) warres seditions, cha-

ges of commē wealths and the death of  
Princes and noble men.

For what times Comets do shyne, ther  
be many whote & drie Exhalations in the

aire, which in drie mē kinde heat, wher-  
by they ar prouoked to anger, of anger co-

meth brawling, of brawling fighting &  
war, of warre victoꝝ, of victoꝝ change

of comon wealths. When also Princes,  
liuing moze delicatly thē other men, at

moze subiect to infection, therfoꝝ dye so-  
ner thē other mē. If it wer lawfull to rea-

son of this sort, we might enduce thē to  
betokē, not only these few things, but al

other things y<sup>e</sup> chance in the woꝝlde.



Yet these predictions haue a shew of reason though it be nothing necessary: but it is a world to see, how the *Astrologians*, dote in suche deuises. They are not ashamed, to ascribe an earthly substance, to ascribe an heavenly influence, and in order of iudgement to vse them as verie starres, suerly by as good reason as to the celestiaall starres, they attribute diuine influences and effectes. But this their folly, hath been sufficiently detected by diuerse godly and learned men, and this place requireth no longer discourse thereof. Wherefore this shall suffice, both for the naturall causes of blazing starres, and also, for all flames in generall. It followeth therfore, that with like breuitie we declare the causes of fiery apparitions.

¶ Of Apparitions

*Apparitions.*

**A** *Parition*, is an Exhalation in the lowest or hyghest region of the ayre, not verely burning, but by refraction of lyght, either of the sunne or the Moone, seemeth as though it burned. Whiche appearance of colour, riseth not of the mixture of the folowe qualities, as it doth in bodies perfectly mixed, as herbes, stones,

stones &c. But only of y falling of light  
vpon shadowe. The light is in steade of  
whyte, and the shadowe or darkenes in  
steade of black. These diuersely mixed  
accozding to y diuerse dispositiō of y exha-  
lation, which ministreth varietie by thick-  
nes or thynnes, cause diuerse collours.

There be commonly recited thre  
kundes of fvery apparitions.

¶ Collours, wyde gapinges, and deepe hooles,  
whiche apere in the cloudes.

¶ Of collours.

Collours are heare ment, when there  
is nothing els to be noted, but the col-  
lours of the cloudes, and they are caused  
(as it is sayde) by casting the lyght into  
the shadowe cloude, accozdyng as it ex-  
ceadeth more or lesse in thicknes. wher-  
of some be very bryght whyte, and that  
is when the Exhalation is very thynne:  
some yealowish, when the Exhalations is  
thicker, sometime ruddy, when it is mean-  
ly thicke, and very black when it is very  
thicke. The redd and ruddy collours are  
sæn, only in the moonyng and euening,  
when the lyght of the sunne is not in  
his full force, for at other tymes of the  
daye, his lyght is to vehement, cleare,

Collours  
in the aire

C.J.

strong,



# A GOODLY

strong, and pearling. This much of colours.

¶ Of wyde gaping.

Wyde ga  
pinge of  
cloudes in  
the ayre.

VV Wyde gaping is caused, when an Exhalation is thick in the middlest, & thinne on the edges, the the light beig receiued into it, causeth it to appeare as though the skye did rende, & fire bzeake out of it.

¶ Of round opening Hiatus.

Rouñdope  
ning in  
the ayre.

These holes called *Hiatus*, differ from wyde gapinges, in nothing, but that they be lesse, & therfore seeme as though they were depe pittes, or holes, and not rending or gaping, and these be those apparitions, that apeare fyery and yet bee not so in deade. Therfore let this be sufficient to haue shewed the natural causes of all fiery *Meteores*.

## The thirde Booke of aery impressiōs.



Vnder y name of aery impressiōs, be cōprehended, such *Meteores*, whose matter is most of the aire. Of this sort be winde, earthquakes, thōder, lightnigs storme wyndes, whirlewyndes, circles, raynbowes, y white circle, called of some watlig strete, many sunes many moones

¶ Of Wyndes.

The wynd is an *Exhalation* whote and  
 drie, drawne vp into y<sup>e</sup> aire by y<sup>e</sup> pow<sup>er</sup> *Wynde.*  
 er of y<sup>e</sup> sunne, & by reason of y<sup>e</sup> wayght  
 therof being driuen down, is laterally or  
 sidelongs caried about the earth, & this  
 diffinition is to be vnderstāded, of gene-  
 rall wyndes, y<sup>e</sup> blowe ouer al y<sup>e</sup> earth, or  
 els som great regions, but beside these,  
 there be particular wyndes, whiche are  
 knownen but only in som coūtries, & the  
 not very large, these wyndes oftentimes *The second*  
 haue another maner of generatiō. And *kinde of*  
 that is on this maner. It must needes be *wyndes.*  
 cōfessed, y<sup>e</sup> win the globe of the earth, be  
 wōderful great holes, caues, or dōgeōs,  
 in which whē ayer abondeth (as it may  
 by diuerse causes) this ayer, y<sup>e</sup> cannot a-  
 bide to be pīned in, findeth a litle hole in  
 or about those countries, as it weare a  
 mouth to break out of: & by this meanes,  
 bloweth vehemētly, yet y<sup>e</sup> force & behe-  
 mens extendeth not far, but as y<sup>e</sup> wynde  
 that cōmeth forth of bellowses, neare the  
 coming forth, is stronge, but farre  
 of, is not perceiued: So this particular  
 wynd, in y<sup>e</sup> countrey, where it breaketh  
 forth, is very violēt & strong, in somuch,  
 y<sup>e</sup>, it ouerthoweth both trees, & houses.



# A GOODLY

yet in other countries, not very farre distant, no part of that boisterous blast is felt. Wherefore this wynde differeth fro the generall wyndes, both in qualities & substance oꝝ matter, foꝝ the matter of them is an *Exhalation*, and the qualities suche as the nature of the *Exhalation* is, very avery, but not avery in deade: but of this particular wynde, the matter and substance is moſte commonly avery.

the thirde  
kynde of  
wynde.

There is yet a thyrde kynde of wynde, whiche is but a softe gentle and coole moving of the ayre, and commeth from no certayne place (as the generall wynde doth) yea it is felt in the shadowe vnder trees, when in the whote lyght and shining of the sunne, it is not perceiued. It commeth whisking sodenly, very pleasant in the heate of the sommer, and ceaseth by and by. This properly is no wynde, but a moving of the ayre by some occasion. As foꝝ the generall wyndes, thei blowe out of diuerse quarters of the ayre, nowe East, nowe West, nowe South, nowe North, oꝝ els inclininge to one of the same quarters. Amonge whiche the East wynde following the nature of the fyre, is whote and drie, the South

Southwynde expressing the qualitie of the ayre, is whote and moyste. the Westerne blast, agreing with y<sup>e</sup> waters proprietye is colde and moyst. The Northe that neuer was warmed with the heat of the sunne, being cold and drye, partaketh the conditions of the earth. The middle wyndes haue middle & mixed qualities after y<sup>e</sup> nature, of those foure principall wyndes more or lesse, as they incline toward them more or lesse.

Generally the profit of all wyndes, by the wonderfull wysdome of the eternall God, is wonderfull great, vnto his creatures. For besydes y<sup>e</sup> these wyndes, alter the weather, some of them byngyng rayne, some drynes, some frost and snowe, whiche all are necessary, ther is yet an vniuersall comoditie, that ryseth by the only maynyng of the ayre. Which were it not continually stirred, as it is, would soone putrifie, and beyng putrified, would be a deadly infection to all y<sup>e</sup> hath breath vpon the earth. Wherefore this wynde whose sounde we heare, and knowe not from whence it cometh nor whether it goeth (for who can affirme from whence it was raysed, or where it is layde



## A G O O D L Y

*Psal. 104.*  
*24.*

is layde downe) as al other creatures besyde doth teach vs, the wonderfull and wyse prouidence of God, that we maye worthely crie out, with the Psalmist, & saye: O Lorde, howe manyfolde are thy workes, in wysdome hast thou made them all, &c. Let this be sufficient, to haue shewed the generation of the wyndes.

### ¶ Of earthquakes.

*Earth-  
quakes.*

A **P**earthquake, is a shaking of the earth whiche is caused by meanes of wynde and Exhalations, that be enclosed, with in the caues of the earth, and can fynde no passage, to breake forth, or els so narrowe a waye that it can not be sone enoughe delyuered. Wherefore, with great force, and violence it breaketh out, and one while shaketh the earth, another while rendeth and cleaueth the same, sometyme it casteth vp the earth, a great heyght into the ayre, and sometyme it causeth the same, to synke a great depth downe, swallowyng both cyties, and towne, yea and also mightie great mountaignes, leauing in the place wher they stode, nothyng but great holes of an vnknown depth, or els great lakes of wa-

of waters.

*¶ Of diuerse kindes of earthquakes.*

**D**iuerse authours wyte dyuerselye, of *Diuerse*  
the kindes of earthquakes, some ma<sup>kyn</sup>des of  
kyng moze and some lesse, but we shall *earth-*  
be content at this tyme to comprehende *quakes.*  
them in folowe sortes.

The first kynde is when the earth is shaken laterally, to one syde, whiche is when the whole force of the wynde dyueth to one place, and there is no other contrary motion, to let it. This wynde if it be not great shaketh the earth, that it trembleth as a man that hath a fyt of an agelee, and dothe no moze harme, but if it be great and violent, it louseth the foundations of all byldinges, be they neuer so stronge, and ouerthroweth whole cyties, but specially y great buildynges, and not onely buyldinges, but some tyme also casteth downe greate hylles, that couer and ouerwhelme, all the valley vnder them. Many noble and *Twelue ci*  
great cities, haue been ouerthrowen by *ties ouer-*  
this kynde of earthquake. It is wytten *throwen*  
that twelue of the mooste bewtifull cy<sup>ties</sup> with one  
ties, and mooste sumptuous buildyngs in *earth-*  
all *Asia*, were ouerthrowne and vtterly *quake.*  
C. iij. destroyed



# A G O O D L Y

destroyed with an earthquake. Howe often, Antiochia, yea within short tyme, was destroyed, they whiche haue redde the hystories, can testifie. Howe terrible

Constantinople the chiefest citie of Grece now the Turkes pallace. The secōd kynde.

was the earthquake, that spooke Constantinople a whole yeare together, that the Emperour, & all the people, were faine to dwell abroade in the fieldes, vnder tentes & pavilions for feare their houses would fall on their heade, it is recorded in Chronicles, & worthy to be remembred.

The seconde kynde is, when the earth with great violence is lifted vp, so that the buyldinges are lyke to falle, and by and by synketh downe agayne: this is when all the force of the wyndes stryueteth to get vpwarde, after the nature of gonpowder, and fyndyng some waye to be deliuered out of bondage, the earth that was hoysed vp, returneth to his old place.

The third kynde.

The third kynde is a gapinge, rendyng, or cleauing of the earth, when the earth synketh downe, and swalloweth vp cities, and towne, with castels, and towers, hylles and rockes, ryuers, and fildes, so that they be neuer seen again. Yea the sea in some places hath been dronke

Earthquake on the sea.

Drinke vp, so that mē myght haue gone ouer on foote, vntyll the tyme of tyde or flood returning, couered the place with waters againe. But in the lande, where this earthquake swalloweth vp any citie, or countrie, there appeareth nothing in the place thereof, but a marueylous wyde and deape goulf, or hole. *Aristotle* *Aristot.* maketh mention of diuers places, and regions that were ouerthrowen with this kynde of earthquake.

The fourth kynde, is when greate mountaynes are cast vp out of the earth, *The four-* *th kynde.* or els when some part of the lande synketh downe, and in steade thereof arysen ryuers, lakes, or fyers, breakyng out wth smoke and ashes. It causeth also ouerflowyngs of the sea, when the sea bottom, is lyfted vp, and by this meanes, arise many Ilandes in the sea, that neuer were seen before. These and other suche landes in miracles, are often to be founde in the *the sea.* wryters of histories, also in the *Philoso-* *phers,* as *Aristotle, Seneca, and Plinius.* *Arist.*

Neuertheles, the effectes of some, as *Seneca.* moste notable it shall not be vnprofitable to recite. *Plinius.* *Plato* in his *Dialogue,* intituled *Timens,* maketh mention by the way



# A GOODLY

A wonder  
full earth  
quake.

Africa.

Europa.

Asia the

three parts

of the earth

Mare mediterraneum

the sea

because

it goeth

through

the midst

of the

earth.

Atlantis.

an Island.

Seneca.

Theron &

Therea.

Arist.

Herodotus.

Egypt some

time a

gulf of

the sea.

of a wonderfull earthquake, whereby  
not only Africa was rent asunder from  
Europa and Asia (as it is indeed at this  
daye, except a lytle necke by the redde  
Sea,) the Sea entring betwene them  
that now is called *Mare mediterraneum*;  
But also a wonderfull great Ilande,  
whiche he affirmeth, was greater then  
Africa and Asia both, called *Atlantis*,  
was swallowed up, and covered by the  
waters; in so much, that on the Sea  
called *Atlanticum*, for a great whyle af-  
ter, no Shippe could sayle, by reason that  
the same huge sea, by resolution of the  
earth of that myghty Iland, was al tur-  
ned into mudde. The famous Ile of *Sci-*  
*cilia* was also some tyme a part of Italy,  
and by earthquake rent asunder from it.  
*Seneca* maketh mentiō of two Ilandes.  
*Theron* and *Therea*, that in his tyme, first  
appeared. It should seeme both by *Aristo-*  
*tle*, and also by *Herodotus*, that Egypt, in  
auncient tyme, was a goulphe of the sea,  
and by earthquake made a drye lande.  
During the raygne of *Tyberius* the Em-  
perour, twelue notable cyties of Asia,  
were ouerthrowen in one nyght, &c.

Howe

¶ How so great wyndes come to be  
vnder the earth.

The great caues and denues of the  
earth, must neades be full of ayere  
continually, but when by the heate of  
the sonne, the moysture of the earthe is  
resolued, many *Exhalations* ar generate  
as well within the earth, as without, &  
where as the places were full befoze, so  
that they coulde receyue no moze exepte  
part of that which was in them noz lett  
out, in suche countries, where the earth  
hath fewe poyes, or els where they be  
stopped, with moysture, it must neades  
followe, that these exhalations struiuing  
to get out, must neades rende the earth  
in some place, or lifte it vp, so that either  
thei may haue free passage, or els rowm  
inough to abide in.

¶ Of the signes and tokens that  
goe before an earthquake  
most commonly.

The first is the raging of the sea, whe  
there are no tempestuous wyndes, to  
styre it, yea when the ayre is mooste  
calme without wyndes. The cause  
why the Sea then rageth, is that the  
wynde beginneth to labour for passage,  
that

*Handwritten notes:*  
The sign-  
nes of an  
earth-  
quake.  
The sig-  
nes of an  
earth-  
quake.



## A GOODLY

that waye, and fynding none, is sent back, and sone after shaketh the lande. The seconde sygne is calmenes of the ayre, and colde, whiche cometh to passe by reason that the *Exhalation*, that shold be abroade, is within the earth.

The thirde signe, is sayde to be, a longe thine strake of a cloude seen, whe the skye is cleare, after the setting of the sonne. This (saye they) is caused, by reason that the *Exhalation*: or vapoꝝ, whiche is the matter of cloudes, is gone into þe earth. Other affirme that it is the *Exhalation* that breaketh out of som narrowe hole of the earth, out of whiche the rest of the wynde cannot issue, neither will it wayghte the tyme, wherfoze within a whyle after, it seeketh and maketh it selfe by soden eruption a broader waye to be deliuered out of pryson.

Also the sunne certaine dayes before it, appeareth dimme, because the wynd, that shold haue purged and dissolued þe grosse ayere, that causeth this dynnes, to our eyes, is enclosed within the bowels of the earth.

The water in the botome of deape welles, is troubled, and the sauor therof infeco

infected, because the pestilēt *Exhalations* y haue ben long inclosed, within y earth do thē beginne a litle to be sent abrode. For thereof cometh it, that in many places where earthquakes haue been, great aboundaunce of smoke, flame, & ashes, is cast out, when the aboundaunce of brymstone that is vnder the ground, thzough violent motion is set on fyre, & breaketh forth. Finally, who knoweth not, what stynking mynerals and other poysonous stuffe doth growe vnder the earth: wherfor it is no wonder if wellwater, before an earthquake, be infected, but rather it is to be marueiled, if after an earthquake, there followe not a greuous pestilence, when the whole masse of infection is blowne abroade.

Last of all, there is harde before it, in the tyme of it, & after it, a great noyse and sounde vnder the earth, a terrible groanyng, and a verie thondzyng, yea somtymes when there followeth no earthquake at all. When as the wynde without shaking of the earth, fyndeth a waye to passe out at. And these for the moske part, or at lest some of them, are forewarnings that the moske fearfull earth.

*Thōdring  
vnder the  
earth.*



# A G O O D L T

earthquake wil followe, then the which  
 there is no natural thing, that bryngeth  
 men into a greater feare. Cato was very  
 curius to confesse him self, that he repen  
 ted, that euer he went by water, where  
 as he might haue gone by lande. But  
 what lande, can be sure? if it be the  
 Lordes will, by this worke of his to  
 make it: what building so strong y<sup>e</sup> can  
 defende vs: when the more stronge the  
 more danger, the higher y<sup>e</sup> greater fall.

## Of thonder.

**Thunder.** Thunder is a sound, caused in y<sup>e</sup> cloudes  
 by the breaking out of a whole & dry  
*Exhalation*, beating against the edges, of  
 the cloude. It is often herde in spring &  
 sommer, by reason y<sup>e</sup> the heat of y<sup>e</sup> sonne,  
 the draweth vp many *Exhalations*, which  
 meeting in the middle regio<sup>n</sup> of the ayre,  
 w<sup>th</sup> colde & moist vapors, ar together with  
 them, inclosed in an hollowe cloud, but  
 whē the whot *Exhalatio<sup>n</sup>* cannot agree w<sup>th</sup>  
 the coldnes of y<sup>e</sup> place, by this strife be  
 ing driuen together, made stronger and  
 kedled, it wil neades breake out which  
 soden & violent eruptio<sup>n</sup>, causeth y<sup>e</sup> noyse  
 which we cal thōder. A similitude is put  
 by gret authors of moist wood, y<sup>e</sup> cracketh  
 in the

a simili-  
tude.

In þe fire, we may adde here vnto þe breaking of an egge in the fire, of an apple, or any like thing, for whatsoener holdeth & withholdeth, enclosed any whot wind, so þe it can haue no venter, it wil seeke it self a way, by breaking þe skinn, shell or case. It wer no ill cōparisō to likē thōder to the sound of a gonne, which be both caused of the same or very like causes.

The sound of thōders is diuerse, after which, men haue diuided þe thōders into diuerse kindes. Making first ij. sortes, *Diuerse* *kindes of* *thonder.* is, small thōder & great. But as for the diuersitie of soundes, generally it cometh of þe diuerse disposition of þe cloudes, one while hauing moze holes then at another, sometime thicker in one place then in another. The smal or litle thōder is, *Small thōder and* when þe exhalatiō is diuē frō side to side, of þe cloude, making a noise, & ether for þe *the kin-* *des therof* smal quātitie, & lesse forcibles, or els for the thicknes of þe cloudes walles, is not able to break thē, but rōbleth vp & down win þe cloud, whose sides ar stronger thē þe force of þe exhalation is able to breake, it rōneth vp & down win, & striking agāst the cloud & moist sides, maketh a noyse not vnlike to the quēching of whote yrd in cold water. *And*



## A G O O D L Y

with

And if *Exhalation* be meanly strong, and the cloude not in all places of lyke thickenes, it breaketh out at those thinn places whiche suche a buffing, as wynde maketh blowyng out of narrow holes.

But if the cloude, be so thynne, that it cannot kepe in *Exhalation*, although it be not kyndled, then it bloweth out with lyke puffinge as wynde commeth out of a payre of bellowses.

Great thō  
der and  
the kindes  
therof.

A great thonder, is when the *Exhalation* is muche in quantitie, and verye whote and drye in qualitie, the cloude also verye thicke and stronge, that easely wyll not geue place to the wynde, to escape out.

Wherefore if the *Exhalation* do vehemently shake the cloude, though it doe not at the first disperse it, it maketh a longe and fearefull romblyng against the sydes of the cloude, untill at the last being made stronger by swyfter motiō, it dissolueth the cloude, and hath lyber- tie to passe out into the open ayer. The cloude resolved, droppeth downe, and then followeth a sholwe of rayne.

Otherwhyles it shaketh the cloude, not long, but streyghtwage rendeth it a long

long space & tyme, whose sounde is like the rendyng of a broad clothe, whiche noyse continueth a pretty while,

And sometime it discusseth the cloude at once, makyng a vehement and terrible cracke lyke a gorine, sometime with great force, casting our stones, but most commonly fyre, whiche setteth manye highe places on fyre. As in the yeare of our Lorde, 1561. the fourth day of June, the steeple of saint Pauls church in London was set on fyre, as it hath been once or twyse before, and burned. The noyse of thonder though it be great in suche places ouer whiche it is made, yet is it not harde farre of, especially against the wynde. Whereof we had experience also in the yeare of our Lorde, 1561. on saint Mathyses daye in February, at the evening, when there was a great flasse of lyghtnynges; and a verie terrible crack of thonder followyng, they that were but 20. myles from London Westwarde, hearde no noyse, nor sound thereof: the wynde that tyme was Western.

The effect of thonder is profitable to men, bothe for that the swete shower doth followe it, and also for that it purgeth,

How farre  
thunder is  
harder

The profit  
of thonder



# A GOODLY

geth, and purifieth the ayre by the swifte  
mouynge of the *Exhalation*, that brea-  
keth forth, as also by the sounde which  
deuidynge and pearcyng the ayre, cau-  
seth it to be muche thynner, which may  
be verified by an historie that *Plutar-*  
*chus* in the life of *T. Quincius Flaminius*,  
reporteth, that there was suche a noyce  
made by the *Grecians* after theyr lyber-  
tie was restored, that the byrdes of the  
ayr that flew ouer them were seen to  
fall downe, by reason that the ayre de-  
uided by theyr crye, was made so thinn,  
that there was no firmitie, or strengthe  
in it to beare them vp. And let this suf-  
fice for thonder, whome lyghtnyng suc-  
ceedeth in treatie, that seildome is from  
it in nature.

## Of Lyghtninge.

**Lightning** Among the diuerse kindes of lightning,  
whiche wyters in this knowledge  
doe number, we shall entreate onely of  
foure kyndes, yet so, that vnder these  
foure, all the reste maye be comprehen-  
ded. The names we must borrowe of  
*Corusca-* the latin tongue. The first is *Fulgetrum*,  
*rio*, *Ful-* The seconde *Coruscatio*, the thyrde *Fulgur*  
*gur*, *Ful-* the fourth, *Fulmen*.

## ¶ Of Fulgetrum.

**Fulgetrum** we cal that kynde of lyghte-  
ning which is ſeen on ſommer nights  
and eueninges, after a whote daie. The  
generation hereof is ſuche, when many  
thynn, light, and whote *Exhalations*, by  
the immoderate heate, haue ben drawen  
vp from the earth, and by the abſence of  
the ſunne, be deſtitute of y<sup>e</sup> force, wherby  
they ſhould haue ben drawen further  
vpwarde, yet ſomethinge aſcending by  
their owne nature, in that they be lyght  
and whote they meet with the colde, ei-  
ther of the night in the loweſt region, or  
els of the ayre in the middle region, & ſo  
by reſiſtence of cōtraries (as it hath been  
oft befoze reherſed) they ar beaten back,  
and with the vehement moving ſet on  
fire. This lightning commonly goeth  
out in the ayre, terrible to beholde, not  
hurtful to any thig. Except ſomtim whe  
the matter of it is, earthy & groſſe, being  
ſtriken downe to the earth, it blaſteth  
corne, and graſſe, with other ſmall hurt.  
Sometyme it ſetteth a barne or thacked  
houſe on fyere. The collour of this  
lightninge, as of all other, is dyuerſe,

Fulgetrum

The collor  
of this ly-  
ghtning.

D. 5.

partly



## A GOODLY

partly according to the matter, & partly according to the lyght. If the matter be thynne, it is whyte, if the substaunce be grosse, it is ruddy, lyke flames of fire, in great light as in the daie it appeareth whyte, in the nyght, ruddy, yet sometime in the daye tyme, we may see it yealow, whiche is a token that the matter is wonderfull thicke and grosse. Olde wyues are, wont to saye that no nyghte in the yere, except one passeth without lyghtnyng, but that is as true as the rest of theyr tales, whereof they haue greate stooze.

### ¶ Of Coruscation.

Coruscation.

Coruscation is a glistering of fyre, rather then fyre in deade, and a glymmerynge of lyghtning, rather then lightning it self. which is y. maner of wayes, one waye, whē cloudes y be lower then the vpper part of the earth, without the compasse of our syght, are enflamed, & the reflexion of that flame, is cast bp into our syght appearing in all poyntes lyke lyghtning, sauinge that the ayer where it appeareth is so cleare, that we are perswaded no lightning can be there caused. Another waye, is when there be thycke cloudes ouer vs, and commonlye  
a double

a double order of cloudes, one aboue another, if lightninge or any other inflammation be in the upper part of these clouds, the lyght of them perceth thzough the lower partes, as thzough a glasse, and so appeareth as though it lyghtned, when perhappes it did lyghten in deade, yet that whiche we saue, was but the shadowe therof. And this is often without thonder.

### ¶ Of Fulgur.

**Fulgur** is that kynd of lightning which followeth thonder, whereof we haue spoken befoze. For when that violent *Exhalation* breaketh forth, makynge a noyce as it beateth against the sydes of the cloude, with the same violence, it is set on fyre, and casteth a great lyghte, whiche is seen, farre and neare. And although the lyghtnyng appeare vnto vs, a good pceate wyle befoze the thonder clappe be harde, yet is it not caused befoze the noyce if any thonder at all doe followe, but eyther is after it or with it. Wherfoze that we see it, befoze we hear the thōder, may be ascribed, either to the quicknes of our syght, that pzeuenteth the hearing, or els to the stopst mouinge of

*Fulgur.*

*The lightening is not befoze the thonder though it seeme so.*



# A GOODLY

Sight pres-  
enteth  
hearing.

The fyre and the lyght thereof, to our eyes, and the slow mounge of the sound vnto our eares and hearynge. These thre kyndes of lyghtnynges, are more feareful then hurteful, but the fourth sel dome passeth wout som damage doing.

¶ Of the fourth kynde called  
*Fulmen.*

The mosse dangerous, violent, & hurtfull, kinde of lightning is called *Fulmen*, whose generation is suche, as foloweth. What tyme, a whote *Exhalation*, is enclosed in a cloude, and breakeynge the same, bursteth forth, it is set on fyre, and with wonderfull greates force stryken downe toward the earth. The cracke of thonder, that is made when this lyghtenyng breaketh out, is sodayne, shorte, and greate, lyke the sounde of a gonne. And often tymes a greate stone is blowne out, with it, which they call the thonder bolt, which is made on this manner. In the *Exhalation*, whiche is gathered out of the earthe, is muche earthy matter, with clatterynge together by moysture, being clammy by nature, consistynge of bymstone and other metallycke substance,

The thonderbolt  
caste out  
of the clou-  
des.

stance, by the excessive heate, is hardened as a byrke is in the fyre, and with the myghtye force of the Exhalation, stronglye cast towarde the earthe, and stryketh downe steeles, and hyghe buildynges of stone, and of woodde, passeth through them and setteth them on fire, it cleueth trees and setteth them on fire, and the stronger the thyng be that resisteth it, the moze harme it dothe to it. It is sharpe poynted at one ende, and thicke at the other ende, whiche is caused by reason, that the moyster part, as heauyer, goeth to the bottome of it. So is the toppe smal, and the bottom thick.

Strongest  
things are  
most hurt  
of lighte-  
nyng.

Men wyte that the thonderbolt goeth neuer aboue fye fote deepe, whe it falleth vpon the earth, whiche standeth with reason, both because the strengthe of it is weakened, befoze it com so neare the ground, and also, because the continual thicknes of the earth, breaketh the force, were it neuer so great.

How depe  
thöderbolt  
goeth into  
the earth,

Both Aristotle, Seneca and Plinius, deuide this lyghtning into thre kyndes.

Aristot.  
Plinius.  
Seneca.

¶ Of the fyrst.

The first is drye, whiche burneth not, to be felte, but deuideth, and perceth

Drie light-  
tening.

D. iij.

With



# A GOODLY

with wonderfull swyftnes. For beinge  
subtyle and pure, it passeth thzough the  
pores of anye thyng, be they neuer so  
small, and suche thynges, as giue place  
vnto it, it hurteth not, but suche thyngs  
as resisteth, it deuiddeth and perseth. For  
it wyl melt mony in mens purses, the  
purses being whole, & vnharmed. Yea,  
it wyl melte a swerde in the scabberde,  
and not hurt the scabberd at al. A wyne  
bessell it wyl cleaue, and yet the wyne  
shalbe so dull, that by the space of thze  
dayes it wyl not ronne out. It wil hurt  
a mans hande and not his gloue. It wil  
burne a mans bones within hym to a  
shes, and yet his skynne and fleshe shall  
appeare fayze, as though nothyng had  
commen to hym. Yea otherwhyle the  
whole man in the momēt of an howze,  
shalbe burned to ashes, where as his  
clothes, shal not seeme to haue been tou-  
ched. It wyl also kyll the chylde in the  
mothers belly, & not hurte the mother.  
And all because the mater is very sub-  
tyle, and thinne, burnyng, and passinge  
thzough whatsoeuer it be, that wyl not  
geue it free passage.

Of the seconde kinde.

The

Mony mol-  
ten i: mēs  
purses &  
swerds in  
scabbe. ds

M. Y. A.

The seconde kynde is moyſte, and be-  
 cause it is very thinne, it burneth not *Moist li-*  
 to ashes, but only blaſteth, or ſcorcheth *ghninge.*  
 trees, corne, and graſſe: and by reason  
 of the moiſtneſſe, it maketh all thynges *Why it*  
 black, that it cometh neare, as moyſte *maketh*  
 wood burning, is ſmoke and maketh *black.*  
 thynges neare it to be blacke & ſmokie.

*Of the thirde kinde.*

The thirde kynde is moſte lyke oure *Groſſe lig-*  
 comen fyre, that we haue here on *htning.*  
 the earth, of groſſe and earthly ſubſtance,  
 wherefore it leaueth a pynte where it  
 hath been, or els conſumeth it into a-  
 ſhes, if it be ſuche a body as wylbe bur-  
 ned with fyre.

*Of the maruayls of Lightning  
 and their cauſes.*

Beſide the wonderful effectes of light-  
 nyng, that haue been already remem- *The ma-*  
 bered, there be many other whiche here *neiles of*  
 after enſue, with the reason and cauſes *lightning*  
 vnto them belonging, as thus.

The nature of lyghtning is, to poy- *Light. poy*  
 ſon beaſtes that are ſtryken therewith, *ſoneth.*  
 as though they had been bytten by a ſer-  
 pent. The cauſe of this is, that the mat-  
 ter of lightnyng, is muche infected with



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byrnstone, and other poysonous metal-  
like substances, whiche will poyson the  
rather in lightening, because it is thinn  
& geueth the passage into euery part of  
the body. It is notable, that Seneca writ-  
teth, howe wyne vessels of wood beinge  
burned with lightning, the wyne wold  
stande still, and not runne out, the rea-  
son hereof, is the swyfte alteration and  
chaunge, wherby also, all the clammy-  
nes of the wyne, is drawen to the out-  
ward moste part, and so keepeth in the  
wyne, as in a skynne, that by the space  
of thzee dayes, it wyl not runne. It wyl  
also poyson wyne, in so muche that they  
whiche drynke thereof, shall eyther be  
madde or dye of it. The cause hereof  
was set forth before.

*Seneca.*

*Wyne not  
running  
the vessels  
being bro-  
ken.*

*Lightning  
purgeth a  
poysonous  
beast.*

Lightning that striketh a poysonous  
beaste purgeth it from the poyson, in so  
muche that it causeth a serpent or snake  
whiche it killeth, to breade wormes,  
whiche otherwyse it would not doe, but  
beyng purged from the naturall poyson  
by the swyfte percypng of the lightning:  
nothyng letteth, but that it may breade  
wormes, as all other corrupte fleshe  
wyl doe.

*A snake  
breadgeth  
no worms.*

If lighte

If lyghtning strike one that slepeth, it openeth his eyes, and of one that waketh, it shytteth the eyes. The cause is this, that it waketh hym that slepeth, and killeth hym befoze he can close his eyes agayne. And hym that waketh, it so amaleth, that he wyneketh, as he wyll doe at any sodayne chaunse, so he dyeth befoze he can open his eyes agayne.

*Lightning  
openeth his  
eyes that  
slepeth &  
closes his  
that wa-  
keth.*

All lyuynge thynges, turne their face towarde the stroke of the lyghtenyng, because it is their nature, to turne their head if any thig com sodely behind them. The reste that haue theyr face toward it, when it cometh, neuer turne befoze they be kyled.

*Lyuinge  
thynges  
turn their  
face towa  
rde lyght-  
ning.*

The reason why it killeth the child in the mothers wombe, not hurtynge the mother, is the tenderneſſe of the one, and the strengthe of the other, when the lightenyng is not behement, otherwyſe both ſhould dye together.

Sometyme lyghtening burneth on the garments, ſhoes, or heare of me, not hurtynge theyr bodyes, and then the Exhalation is nothyng behement. Sometime it killeth a man & there apereth no wounde

*Garments  
burnt the  
body vn-  
hurt.*



wounde without, neyther anye hurte within, no not so muche as any signe of burnyng: for then the *Exhalation* whiche being kindled is called lyghtning is wonderfull subtill and thynne, so swiftly passing thzough that it leaueth no marke or token behinde it.

*Lightning  
causeth  
blindnes  
swelling  
or leprosy*

They that beholde the lightening, are either made blynd, or their face swelleth, or els become lepers, for that fyer *Exhalation*, receiued into the pores of their face and eyes, maketh their face to swell, and bzeake out into a leprosie, and also drieth vp the *Chrystalline* humoz of their eyes, so that consequētly they must needes be blynde.

*Eutropius  
us.  
M. Tullius  
Cicero  
Apulia.*

*Eutropius* sheweth, that the same day in whiche *Marcus Tullius Cicero*, was bozne, a certeine virgine of *Rome* ryding into *Apulia*, was stricken with lightening, so that all her garmentes beinge taken from her without any rendinge, she laye starke naked, the lasing of her bzeast being vndone, & her hose garters vntied: yea, her bzacelettes collers and rrynges, being also loosed from her. Likewise her horse laye dead with his bzidle and girtes vntied.

The

The places of them that are burnt *The wōns*  
 with lightning are colder then the reste *des of ligh*  
 of their bodies, other because the grea *tning cold*  
 ter heat draweth away the lesser, or els  
 because, that by the great violence the  
 vitall heate is quaghte extinguished in  
 that place.

The sea Calfe is neuer hurt with *Sea calfe*  
 lyghtening, wherfore the Emperoures *not hurt*  
 tentes, were wonte to be couered with *with ligh*  
 their skinnies. *tening.*

The Baye trees, and bore trees, are *Bayes &*  
 neuer or seldom stryke with lightning. *boxe sel-*  
 The cause of these may be, the hardnes *dom hurt*  
 of their skinne, which hath so fewe pore *with ligh*  
 holes, that the Exhalation can not enter *tning.*  
 into them.

The eagle also among fowles is not  
 stryken with lightning, wherfore the  
 Poetes sayne, that the Eagle carieth *Iupis* *The Ea-*  
 ters armur, whiche is lightnyng. The *gle Iupi-*  
 reason may be the thiknes and drieness *ters har-*  
 of her fethers, whiche wyll not be kin *nes bearer*  
 dled with so swift a fyre.

¶ Of storme wyndes.

A Storme wynde, is a thycke Exhalatio *Storme*  
 violently moued out of a cloude with *wyndes.*  
 out inflammation or burning. The mat  
 ter of



ter of this storme, is all one with þe matter of lightening, that hath been spoken of: namely it is an *Exhalation* very whot and drye, and also grosse and thicke, so that it wyl easely be set on fyre, but the it hath another name, & other effectes

The forme or maner of the generation is suche. When abundance of that kynde of *Exhalation* is gathered together, within a cloude, whiche nedes wyl haue one waye out or other: it breaketh the cloude, & causeth thonder, as it hath been taught before, but if the matter be very thicke, and the cloude somewhat thynne, then doth it not reede the cloude, but fallynge downe, beareth the cloude before it, and so is caried as an arrowe out of a bowe. It doth alwayes goe before a great soden shoure, for when the cloude is broken, the water muste nedes fall downe. Also it is so grosse, and so thicke, that it darkeneth the ayre, and maketh all the lowest region of the ayre, to be in manner as a darke smoke cloude. It causeth tempeste in the Sea, and wonderfull great daunger to them that beare sayle, whome if it ouer-  
take

take, it byngeth to vtter destruction. So soden it is, that it can not be resisted w<sup>th</sup> sodeyn helpe. So violent it is, that feble force canne not withstande it. Finally, it is so troublesome w<sup>th</sup> thonder, lyghtnyng, rayne and blaste, besydes these darkenesse and colde, that it woulde make menne, at so neare a pynche to bee at their wyttes endes, yf they weare not accustomed to suche tumultuous tempest. Wherfore it weare profitable, to declare the signes that go before it, to the ende, menne myght beware of it. But they are so comen to other tempestes, that either they are knowen well enoughe, or els beyng neuer so well knowen, in a seldonie calamytie they woulde lytle bee feared.

The Sea shippes subiecte to more danger, haue more helpe if it bee vsed in tyme, but no sygnes foreknowen, can profit the dweller of the lande, to keepe his house from ruine, except it weare to saue his lyfe from the fall of his mansion. The soden violence of this tempest to hym, is more seldom tymes, but more incurable when it cometh then to the Maryner, who hathe some ayde to looke



to looke for, by his comming, the other if he escape with his lyfe, may comforte hym selfe, that he was neare a greate daunger, & cast with hym selfe to bulde by his house agayne. *Ma.*

*¶ Of whyrle wyndes.*

*Whirle  
wyndes.*

A Whirlewinde, is a wynde breaking out of a cloude, rowling or wynding round about, ouerthowsyng that which standeth neare it, and that whiche cometh befoze it, caryng it with him a lott in the ayre.

It differeth from a storme wynde in thre pointes.

First in the matter whiche is lesse in quantitie, and of thinner substance.

Secondly in the mouing, whiche is circular wyndyng about, where as the storme bloweth a slope and sydelonges. Also a whyrlewynde in the mouinge diuideth not it selfe abroad, and bloweth dyrectly as the storme doth.

And thirdly in the maner of the generatio, for a storme doth alwayes come out of one cloude, but a whyrlewynde some tyme is caused by meanes of two contrary wyndes that meete together. In lyke maner, as we see in the creation

of ci

of cyties, where the wynde is beaten back from two walles, meetinge in the myddest of the streete, there is made a lytle whyzlewynde, which whyskyng round about taketh vp the dust, or straws and bloweth it about after the very similitude of the great & feareful whirle wynde. The reason of the going about, is this, that when the walles beat back the wynde from them, whiche aboundeth in that place, and those wyndes, whē they meete by reason of equal force on bothe sydes, can neyther dzyue one y other back agayn, nor yet passe through one y other: it must needes be, that they must bothe seeke a waye on the syde at once, and consequently, be caried round about, the one as it were pursuing the other, vntyll there be space enough in the ayre, y they may be parted asonder.

The matter of a whyzlewynde, is not muche differing from the matter of stozme and lyghtening, that is an *Exhalation* whote and dzye, breakyng out of a cloude, in diuerse partes of it, which causeth the blowyng about. also it is caused as it hath been sayde, by two or more wyndes, blowyng from diuerse places;



The troubles  
of  
whirle-  
wyndes.

Whiche may be of particular causes & hath been sheweth before in the chapter of wyndes. This tempest is noysome to man and beaste, Sea and lande, thyngs lyuing, and life lacking. For it wyl take vp bothe men and beastes, stoncs and cloddes of earth, whiche when it hath bozne a great waye wyl not be so curious as to sette them downe agayne, but negligently letteth them fall from a great heyght, or els violently thzoweth them downe to the earth.

It breaketh trees wyndyng them about and pulling them vp by the rootes. It turneth about a shippe and bzoweth it in peaces w other mischiefes beside.

¶ Of the fyred whirle wynde.

Fyred  
whyrle-  
wynde.

Sometyme a whirlewynde, is sett on fyze within the cloude, and then breaking forth, flyeth rounde lyke a great cartewhyle, terrible to beholde, burninge and ouerthzowynge all drye thynges, that it commeth neare, as houses, woodes, cozne, grasse, and whatsoeuer els standeth in the waye.

It differeth not from a whirlewind, saving that it is kindled & set on fyze, so appearing, els the generation of both is called

called one.

¶ Of Circles.

The Circle called *Halon*, is a garland of diuerse collours that is seen about the sunne, the Moone, or any other sterre specially about *Iupiter* or *Venus*, for their greate bryghtnes. It is called of the Greeks a compassed platte, of the Latines a crowne or garlande.

The matter wherin it is made, is a cloude of equall thicknes, or thinnes, coming directly vnder the body of the sunn, the Moone, or other sterres, into whiche the lyght of the heavenly body is receyued, and so appeareth rounde, because the sterre is rounde, or as a stone caste into the water, maketh many round circles, dilatynge in bzeadth, vntyll the brightness of the mouynge is ended: so is it in the ayre the lyght beames perceyng it, causeth broade Circles to be delated, whiche appeare whyght, purple, black, redde, greene, blew, and other collores, according to the disposition of the cloudes mater. The cause of suche collours, is shewed befoze in the peculiar treatie of collours.

This circle is oftener seen about the Moone, then about the Sunne, because

C. 9.

the

Circles about the sunne, the moone & other sterres *Iupiter* & *Venus* Planets

Circles in the water

The colours of circles



## A GOODLY

the heate of the Sunne draweth the vapors to hyghe, where it can not be made. Also, because the nyght is a moze quiet tyme then the daye from wynde, it is moze often in the nyght, then in the daye. Sylidome about other sterres, because their lyght beams ar to weake often to perse a cloud, yet oftner about smal sters then the Sunne, because the lyght of the Sunne, perceth the cloude moze forcibly, then that this Halon can many tymes be cause.

Circles about a candle.

Otherwhyles it is seen about a candle, which must be in a very thicke and grosse ayre, of suche proportionate thicknes, that it may receiue the lyght as the cloude doth from the sterres, as in smoky places, or whotehouses.

the signes of these circles.

This kynde of Circle, is sometimes lyke a raynbowe, sayunge that it is a whole circle, vnlesse the sterre vnder whiche it is caused, be not all rysen, or els the cloude in whiche it is seen be not all come vnder the sterre, or after it hath come vnder some parte thereof be dissolved from the rest.

These Circles be signes of tempest, and wyndes, as wytnesse bothe Virgiles and

and Aratus.

Virgilius

The wynde shall blowe from that quarter, where the circle first beginneth to breake. The cause whereof is this, that the circle is broken, by the wynde that is aboue, whiche is not yet come downe towarde vs, but by this effecte aboue, we may gather both that it wyl come, and also from what quarter.

Aratus.

Poetes.

A great Circle about the Moone, bea tokeneth great colde and frost to follow after.

Signe of frost.

But if it banythe awaye and be dissolved altogether, it is a signe of fayre weather.

Signe of fayre weather.

If it be broken in many partes, it signifieth tempest.

Signe of tempest.

If it war altogether thicker, & darker it is a foze warnyng of rayne.

Signe of rayne.

One alone after Ptolomee, pure and whyte, banyshing away by litle & litle, is a token of fayre weather.

Ptolomee.  
Signe of

Two or thre at once, portendeth tempest, if they be ruddy, they shewe wynde to come, and toward snowe, they seme as it were broken and rockye.

Signe of tempest.

Being darke or dymme, they signifye all these foresayde euentes, with more snowe.

Signe of



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force and abundaunce, it is oftener caused in *Autumne*, and spring then in wynter or sommer, the cause is the temperatnes of the tyme.

*Arist.*  
*Antipho*

The cause why it apeareth sometime greater, and sometyme lesser, is in the qualittie of the matter, whiche as it is grosse, or thynne, wyll more or lesse be dylated, and stretched abroad, and also as some wil haue it, of the weakeries of mens syght. Of whiche *Aristotle* bryngeth an example in one *Antipho*, whiche dyd alwayes see his olone image before hym in the ayre, as in a glasse, whiche he affyrmeth to haue been for the weakeries of his syght beames, that coulde not pearce the ayre, so that they were reflected agayne to hym selfe.

And thus muche for *Halone* and the causes, signes, or tokens of it.

¶ Of the Raynbowe.

*Rainbow*

*Possidonius*  
*lib. 1.*

The Raynbowe, is the aparition of certain colours in a cloude opposite against the sunne, in fashion of halfe a Circle. *Possidonius* sayde, it was the sunnes looking glasse, wherein his image was represented, and that the blew colour

coloured, was the proper collour of the cloude, the redde of the sunne, all the other collours of commirtion.

It differeth manifoldly from *Halone*, for the raynbowe is alwayes opposite against the sunne, but *Halone* is directly vnder it.

They differ not onely in place, but also in fashion, the raynbowe, is but halfe a Circle, the *Halone* is a whole Cycle.

Likewys they vary in colloure, for the raynbowe is more dymme and of purple collour, the *Halone* whyter and hyghter.

Also in continuance, for the raynbowe may continue, longer, then *Halone*.

The image of the raynbowe may be seen on a walle, by sunn striking thzough a pretious a fire pointed stone, called *Iris*, or anye stone cal- other Christall of the same fashion, also led iris. thzough some glasse wyndowe.

*Halone* is seen aboute candelles, in smoky places, as are bathes & kychenes.

The manner of the generation of the raynbowe is suche, there is opposit againste the sunne, a thycke watrye cloude, whiche is alreadye resolued into



# A GOODLY

*A similis  
tude.*

beloye droppes of rayne, as (for a grosse  
similitude) is seen on the potlidde when  
the water in the vessell hath sodden, or  
is very whote, the lydde wylbe al full of  
small droppes of water, whiche come  
fro the water in the vessell, fyrst by heat  
resolved into smoke, after when it can  
not goe at large, it is resolved agayne.

Wherfore vpon such a cloude, the sunne  
beames strykyng, as vpon a smoothe  
glasse, doe expresse the image of y sunne  
vnprefectly, for the great distace. Or els  
the sunne beames, strike into an hollow  
cloude, where they are refracted or bro-  
ken, and so cometh to the eyes of hym y  
beholdeth the raynbowe.

*Simili-  
tude of  
the rayn-  
bowe.*

The similitude thereof is seen, whe-  
men sayle or rowe in boates, the sunne  
shyneth vpon the water, whiche casteth  
on the vessels syde, the collours & image  
of the raynbowe.

Lykelysse water in an brinall holde  
against the sunne, receyueth the lycht &  
sheweth collours on the walle.

*Rainbow  
of the sunn  
Rainbow  
of the  
Moone.*

There be two kindes of rainbowes,  
one of the sunne, another of the Moone,  
the one by daye, the other by nyght, the  
Raynbowe of the sunne often, but of the

Moone

Moone very seldome, in so muche that it can be but twyse at the mooste, in fiftye yeares, and that when the Moone, is in the East or West, full in perfect opposition. It hath not been many tymes seen since the wytyng of histories, yet some tymes and for the rarenes, is takē for a great wonder. Yet is it in collour nothing so beutiful, as the sunnes, but for the mooste part, whight, as mylke, other diuersities of collours are scant perceyued. When it appeareth, it is sayd to signifie tempest.

The tyme of the raynbolwe, is often after the poynt of *Autumne*, both for the placing of the sunne in competent lownes, and also for abundance of matters, seldome or neuer is the raynbolwe seen about the middest of sommer.

There may be many raynbolwes at one tyme, yet commonly but one principall, of whiche the rest are but shadowes, and images, the seconde shadowe of the first, the thyrde of the seconde, as appeare by placing of their collours.

It remayneth to shew why it is but halfe a circle, or lesse, neuermoze, and why the whole cloude receyueth not the



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same collours, that the raynbowe hath. The cause of the fyrste is, because the center, or mydle point of the raynbowe, that is *Diametrally* apposite to the center of the same, is alwayes either in the *Horizon* (that is the circle cutting of our sight of heauen by the earth) or vnder it. The cause why the whole cloude is not colloured, is because that in the myddest the beames as strong, perse throughte, but on the edges where they are weaker, they are reflected or refracted.

Nowe for so muche, as God made the raynbowe a signe and Sacrament of his promyse, some thynke it was neuer seen before the floude. They reason maye be this, that the earthe after the fyrst creation was then so fructfull, that it needed none, or very lytle rayne, so that suche darke cloudes, weare not often gathered, the fructfull ground not so easely remitting his moysture, that then was fatte and clammie, harde to be drawn by: so it myght be that ther was no raynbowe before, as we cannot fynde that euer it rayned before. But whether it were or not, it is certayne, that then it became a Sacrament, wher  
as it

as it was none before, which when we beholde, it behoueth vs to remember, the truthe of God in all his promyses, to his glozie and our comfort.

The mylke waye called of some the waye to saint Iames and

the white circle seen in the night.

The milke way, is a whyte circle seen in a cleare night, as it were in the firmament, passing by the signes of Sagittarius and Gemini.

The cause thereof, is not agreed by among Philosophers, whose opinions I thought best to reporte, before I come to the moste probable causes.

First of all Pithagoras, is charged with a Poeticall fable, as though it had been caused by reason that the sunne did once runne out of his pathway, and burned this part wherof it loketh whyte.

Other as Anaxagoras and Democritus, sayde, that it was the light of certeine sterres, shynag by them selues, of their owne light, which in the absence of the sunne, might be seen. But this opinion is also false, for the sterres haue no light of them selues, but of the sunne, also if it wer so, it shold appear about other sterres,

Demo-



# A GOODLY

Democritus is also reported to haue sayde, that it was nothing els but innumerable lytle starres, whiche with their confuse lyght, caused that whytnes, to this opiniō, Cardane semeth to subscribe.

*Cordanus*

*Phaeton.*

The Poetes haue folwe fables of it, one that Phaeton, whiche on a tyme guided the Chariot of the sunn, & wandring out of the way, did burne y place, wherfore of Iupiter he was stryken downe wyth lyghtnyng.

*Ouid.*

*Met. a. Pr.*

The second, that it is the high strete in heauen, that goeth streight to Iupiters pallace, and both sydes of it, the cōmen sorte of Gods do dwell.

*Hebe.*

The thirde, that Hebe, one which was Iupiters Cupbearer, on a tyme, stōbled at a starre, and shedde the wyne or mylke, that was in the cuppe, which coloured that part of heauen to this daye, wherfore she was pout out of her office.

*Apollo.*

The fourth, that Apollo stode there to fight against the Giances, which Iupiter made to appeare, for a perpetuall memory.

*Theophrastus.*

Theophrastus a philosopher affirmed, that it was y ioyning together, or seeme of the two halfe globes, whiche made it appeare

appeare moze light in that place then in other.

Other sayde, it was the reflexion of the shyning light of fyre, or sterre light, as it is seen in a glasse, but then it sholde be moueable.

*Diodorus*, affirmed, that it was heavenly fyre, condensed or made thick, into a circle, & so became visibible, wheras the rest for the purenes, clearenes, and thinnes, could not be scene. *Diodorus*

*Possidonius* whose mynde to many see meth very reasonable, saide: it is the infusion of the heate of sterres, whiche therfore is in a circle, contrarie to the *Zodiacke*, (out of whiche the sunne neuer wandzeth) because it myght temper the whole compasse with vitall and lyuely heate. Although in my mynd he hath rather expessed the finall cause, then the efficient. *Possidonius*, *Zodiacke*.

*Aristotles* opiniō is, that it shold be y beames of a great circle, whiche is caused by a cloude or *Exhalation* drawn vp by those sterres, whiche be called *Sporades*. This opinion of *Aristotles* is myslyked of mooste men, that haue trauayled in this science and worthely. For if it were *Arist.* *Sporades*.



were of the nature of elementes, as *Exhalations* are, it would be at length consumed. But this circle neuer corrupteth, therfor it is not of *Exhalatiōs*. Also it neither increaseth or diminisheth, which is a playne p<sup>ro</sup>ofe, that it consisteth not of elementall matter. Although *Aristotle* seeme to make a double circle, one celestiall, another elementall.

The last opiniō is of them that say, it is of the nature of heauen, thyecker in substance then other partes of heauen be, hauing some lykenes to the substance of the Moone, which being lightned by y<sup>e</sup> same, as al y<sup>e</sup> starres be, apereth whight. And this opiniō I take to be y<sup>e</sup> most probable, because that sentēce of sterrelight seemeth not so reasonable to be only in that place, and not els where.

The finall cause of this milke whyte circle, hath been already touched in the opinion of *Possidonius*, wherunto also in *Plinius*. *Plinius* in the xvij. booke & xxiij. chapter of his naturall history agreeth, affirming y<sup>e</sup> it is very profitable, for the generation & frutefull increase of thinges that growe on the earth. The *Mathematicians* that haue measured y<sup>e</sup> breadth therof, affirme that

that toward the north it passeth over the  
eclipticall lyne of the ninth spheare, frō  
the xviij. degré of *Geminis* into the secōde  
degré of *Cancer* which is xij. degrés, &  
toward the South, frō the viij. degré of  
*Sagittarius* to the xij. degré of the same  
signe, & because it is ther diuided into ij.  
bꝑanches (as may easily be seen in a clear  
night) it reacheth frō the xliij. of *Sagitta-  
rius* to the second degré of *Capricorne*.

This circle if it be of the nature of hea-  
uen, is vnproperly placed amōg *Meteores*  
or impressions, but because of *Aristotles*  
mynde, who wyll haue it to be an im-  
pression kendled, & their opinion whiche  
thinke it proceadeth of y<sup>e</sup> light of *sterres*  
it is not wout good cause in this place  
intreated of.

¶ Of beames or streames of light appea-  
ring through a cloude.

Ther is yet another kind of impressiō *Beames or*  
caused by the beames of the sunne, *streames.*  
stryken through a watry cloud, being of  
vnequal thines, y<sup>e</sup> is thinner in one part  
thē in another, so y<sup>e</sup> it cannot receiue the  
beames in any other form, thē y<sup>e</sup> they ap-  
pere direct or slope downward, of diuers  
colloꝝ, & y<sup>e</sup> same y<sup>e</sup> ar y<sup>e</sup> colloꝝ of y<sup>e</sup> rayn-  
bow, though not so euident, because y<sup>e</sup> res



fierion is not so strong. They varie in  
 collours, some are more purple, or ruddy,  
 when the cloud is thicker some yealow &  
 whitish when the cloude is thinner, & so  
 other colours are caused likewise; wherof  
 you may reade the proper causes in the  
 collours of cloudes and other lyke parts  
 of this treatise. The common people call  
 it the descēding of the holy ghost, or our  
 Ladies Assumption, because these things  
 are painted after suche a sort. Other say  
 that it is rayne, stryking downe in ano-  
 ther place, as though they could see the  
 droppes falling. And they are not alto-  
 gether deceiued, but in the time, for sone  
 after it wyll rayne, because this impres-  
 sion appeareth out of a watry cloude.  
 They are called by dyuerse names, as  
 rodde, wandes, coardes of tents, vnto  
 whiche they are not much vnylike, sta-  
 ues and lytle pyllers, when they seeme  
 greater and thicker, many being ioy-  
 ned together. The rayne bowe, the cir-  
 cles and these lyghtbeames, are all of  
 one maner of generation, in so muche  
 that if you deuide the circle, it shalbe a  
 rayn bowe, if you drawe it streyght,  
 in lengthe, it maketh streames or bea-  
 mes.

mes. Herein they agree, namely in foyme and matter, but they differ in outwarde foyme, whiche we may call fashyon, as the one is round, the other half round, & the thirde directe, streyght or fallynge a slope. Also they differ in place, about whiche they stande, for streames are only about the sunne, raynbowes about the sonne often, and seldome about the Moone, but circles both about the sunne and the Moone, and also about any other of all the sterres, yet rather and oftener about bright sterres. To make an ende of these streames, they appeare diuersly, after the fashyon and place wherein the cloude hangeth in respect of the sunne.

For some tyme they are seen only in the edge of a cloude, all the breadth of that cloude. Sometime through the middes of a cloude, being thynner there, then in other partes, and then they are spreade rounde about lyke a tente or pavilion used in warre. They are mooste commonly seen in suche tymes, as there is great aboundance of rayne, whiche they, by their apparition doe signifie not yet to be ended. And thus muche concerninge direct lyght beames called roddees &c.



Manye  
Sunnes at  
once.

Alexan-  
der the  
great.

Darius.

It is straunge and maruellous to be-  
holde, the lykelyhode of that, whiche  
Alexander the great, sending woorde to  
Darius, sayde to be impossible, that two  
sonnes should rule the worlde. But of-  
tentimes, me haue seen, as they thought  
in the firmament, not only two sonnes,  
but oftener thre sunnes, and many more  
in number; though not so often appea-  
ring. These how wonderful soeuer they  
appeare, proceade of a naturall cause,  
whiche we will endeuour to expresse.  
They are nothing els but Idols, or I-  
mages of the sunne, represented in an  
equall smooth and watry cloude; placed  
on the side of the sunne, & sometime on  
both sydes, into which the sunn beames  
being receiued as in a glasse, expresse y  
likenes of fashion & light, that is in the  
sunne, appearing as though there were  
many sunnes, where as in dede there is  
but one, & all the rest are images. This  
thicke & watry cloude, is not sayde to be  
vnder the sunne, for then it wolde make  
the circles called crownes or garlands;  
it is not opposit to the sunn, for that wolde  
it make the rainbowl, but it is sayd to be  
on the

on the side, wher the image may be best represented. Also it may not be to far off, for then the beames will be to feble to be reflected, neither yet to neare, for if it so be the sunne wil disperse it: but in a competent & middle distance, for so representation of many sunnes is caused.

They are most often seen, in the morning & euening, about the rysing or going downe of the sunn, seldome at noone tyme, or about the middell of the day, because the heat will soon dissolue the. Yet hath there been some seen, which began in the morning, & continued all the daye long, vnto the euening. Sometimes there appeare many litle sunnes, like vnto litle starres, which are caused after the same sort, as we doe see a mans face, to be expressed in all the peces of a broke glasse:

So when the cloude hath many separations, there appeare many sunnes, on one syde of the true sunne, sometimes great, and sometimes litle, as the parts of the cloude separated are in quantitie.

They doe naturallie betoken tempest, and rayne, to followe because they can not appeare, but in a watry disposition of the ayre.

Many

Many

small suns

like stars

Similis

inde

The signification of many sunnes.

F. g.

Also



Also if they apeare on the Southside of the sunne they signifie a greater tempest then if they appeare on the Northside. The reason is alledged, because the Southerne vapor is sooner resolued into water, then is the Northerne.

For a supernaturall signification, they haue often tymes been noted to haue portended, the contention of Princes for kingdomes. As not longe befoze the contention of *Galba*, *Otho*, and *Vitellius*, for the Empire of Rome, ther appeared thre sunnes. Also of late toward the slaughter of *Lewes* kyng of Hongary, were sen thre sonnes, betokening thre prynces that contended for the kyngdō, namely *Ferdinando* nowre Emperour, *John* Mayuode, and the great Turke.

¶ Of many Moones.

After the treatie of many sunnes, it weare not harde for any man, without farther instruction to knowe the naturall cause of many Moones. For they are lykelyste Images of the Moone, represented in an equall cloude, which is watry, smothe, and polshed, euen lyke a glasse. Some call the (as *Plinius* saith) night sunnes, because they iogned with the

*Galba,*  
*Otho,* and  
*Vitellius*

Many  
Moones.

*Plinius.*

the light of the true Moone, geue a great  
shynning light, to dryue awaye the sha-  
dowe and darkenes of the nyght.

It were superfluous to wyte, more  
of their causes, or effectes, whiche are al  
one with those, that haue been declared  
of the sunnes,

It may be doubted why the other  
starres doe not lyke wyse expresse theyr  
image, in watry cloudes, and so the nū-  
ber of them to our sight should be multi-  
plied: it may be aunswered, that their  
lyght or beames, are to feeble, & weake  
to expresse any suche similitude or lyke-  
nes in the watry cloudes. For although  
they haue garlandes, or circles, aboute  
them, that are caused in a vapor, that is  
vnder them: yet it is manifest, that this  
apparition hath not neede of so strong a  
lyght, as is requyred to prynt y images  
of them in the cloudes. Agayne the gar-  
landes are direct vnder, and therfore ap-  
ter to receyue suche apparition.

It may be agayne objected that the  
starres haue their image perfectly and  
sufficiently expresse in glasses, here on  
the earth, yea, and at the day tyme, whe  
their lyght is eyther none or mooste fee-  
ble, and

*Why o-  
ther starres  
are not so  
represen-  
ted.*



ble, & weake, as we see it is used at mid-  
sommer to beholde that great starre cal-  
led *Sirius*, in a glasse euen at noone days.

*Sirius a  
great star  
seen at  
noone in  
Sommer.*

Also we see euery night, the image of  
the starres in calme and quiet standing  
waters, then what shoulde let, but that  
their images myght also be expresseed in  
watry cloudes.

*An ans-  
wer.*

Hereto may be answered, that the  
let is in the cloude, which is neyther so  
harde as is the glasse, nor yet so conti-  
nuall as the water, but consisteth of in-  
numerable small droppes, so that except  
the light of the starres were stronger, it  
can in the expresse no vniforme images  
of them, as it doth in glasses, and in the  
water. Notwithstanding, in wyters of  
wonders, we reade some such like thing  
sometime to haue chaunsed.

There hath been often seen manye  
sunnes, in the daye tyme, and after the  
sunne settinge, at the rising of the full  
Moone, there haue appeared manye  
Moones, whiche was by this meanes  
that the same cloude, that receiued the  
sunne beames, in the morning, taried in  
the same place, & at y<sup>e</sup> Moones rising, was  
ready also to receiue her image.

¶ Of wonderfull apparitions.

**V** V E will close this booke, with a brief <sup>Wonder-</sup>  
 declaration of the natural causes, <sup>ful apar-</sup>  
 of many thinges, that are seen in y<sup>e</sup> ayre, <sup>tions.</sup>  
 very wonderfull & straunge to beholde,  
 which in these later yeares, haue been  
 often seen and behelde, to the great ad-  
 miration of all men, not without the sin-  
 gular prouidence of God, to forwarne vs  
 of many daungers, that hange ouer vs,  
 in these moste perilous tymes.

The aparition of which, as it is most  
 wonderfull, so the serching of the cause,  
 to vs is moste harde & difficulte. A great  
 deale the rather, because no mā hath he-  
 therto enterprysed (to my knowledge)  
 to seeke o<sup>r</sup> at any cause of them, but all  
 men haue taken them as immediat my-  
 racles, without any naturall meane o<sup>r</sup>  
 cause to procure them.

And I truly, do acknowledge y<sup>e</sup> they  
 ar sent of God as wonderfull signes, to  
 declare his power, & moue vs to amēde-  
 ment of life, in dede miraculus, but not  
 yet so, y<sup>e</sup> they want a natural cause. For  
 if they be wel weyghed & cōsidered, it is  
 not harde to finde, y<sup>e</sup> they differ much frō  
 such miracles, as ar recorded in y<sup>e</sup> scrip-  
 F. iij. ture, and



and admitted of diuines. So that, as I  
 abhorre the opiniō of *Epicures*, to thinke  
 that suche thinges come by chaunce, but  
 rather by y<sup>e</sup> determined purpose of gods  
 p<sup>r</sup>ouidence: so I cōsent not with them,  
 that suppose when any thing is deriued  
 from any naturall cause, God the chiefe  
 and best cause of al thynge is excluded.

Some of these wonderfull appariti-  
 ons consist of circles and rainbowes, of  
 diuerse fashions & placings, as one with  
 in another, the edge of one touching ano-  
 ther, one diuiding o<sup>r</sup> going th<sup>r</sup>ough ano-  
 ther, with lyke placing of small circles,  
 about great circles, o<sup>r</sup> partes of smal cir-  
 cles, some with the endes v<sup>p</sup>ward, som  
 downward, some asyde, & some acrosse,  
 but all fo<sup>r</sup> the most part in vniforme o<sup>r</sup>-  
 der constituted o<sup>r</sup> placed, fo<sup>r</sup> the o<sup>r</sup>der of  
 them pleasaunt to beholde, but fo<sup>r</sup> the  
 Arangenes somewhat fearfull. Suche a  
 lyke apparition, is made with the sunns  
 o<sup>r</sup> Moones images, ioyned vnto these cir-  
 cles, set also in good & vniforme o<sup>r</sup>der.  
 The cause of these is the meting toge-  
 ther, of all those seuerall causes, that  
 make the circles, raynbowes, streames  
 and images of the sunn o<sup>r</sup> mōne, which  
 ioyned

joyned altogether, make the wonderful  
 sight of strange raynbowes, positions of  
 circles, crosses, & diuerse lyghtes, which  
 pertain to the knowledge of Optice and *Optice C*  
*atropice*, that teache howe by diuerse *trioptice*  
 refractions and reflections of beames, such  
 visions are caused. So that he, whiche  
 will knowe howe they are generated,  
 must returne vnto the seuerall treatyses  
 of raynbowes, circles, streames, & ima-  
 ges, of the sunne or Moone, and if in the  
 he finde not knowledge sufficient, to in-  
 structe him, I must send hym to the de-  
 monstrations of perspective, where he  
 shall want nothyng.

Another sort of them, no lesse often  
 behelde within these fewe yeares, then  
 y former, but a great deale more straunge  
 and wonderfull to looke vpon, are the si-  
 ghtes of armies fighting, in the ayre, of  
 Castels, Cities, and Townes, with  
 whole countries, hauing in them hills,  
 valies, ryuers, wodes, also beastes, me,  
 and foules, monsters, of whiche ther are  
 no suche kyndes on the earth, and synal-  
 ly all maner of things and actions, that  
 are on the earth, as burialles, pro-  
 cessions, iudgementes, combates, men,  
 F. v. women,



Women, childre, hoxses, crownes, arms  
 of certayne noble men, & contries, wea-  
 pons of all sortes, sometymes starres,  
 angels, as they ar painted in the image  
 of Christ crucified, besieging of castels  
 and towncs, many thynges and gestures  
 done by men or beastes, the very simili-  
 tude of persones knowen to the behol-  
 ders, as of late, was seen the very image  
 of the Emperour Charles, insomuche  
 that they whiche behelde it, put of their  
 cappes, thinking verely it had been he,  
 of J<sup>h</sup>s Frederick prince Elector of Sax-  
 on, who y<sup>e</sup> time was prysoner with the  
 perour. Also the image of small crosses,  
 which hath ben not only in the ayre, but  
 also on the earth, on mens apparell, on  
 dishes, platters, pottes, & al other things  
 so that the Jelves haue been full angry,  
 that they could neither washe, nor rub  
 them out of their aparell. In Germany,  
 also fyers and many suche thinges, as it  
 were long stozies, seen in the ayre.

All these wōderfull aparitions, may  
 be caused two maner of wayes, the one  
 artificially, the other naturally. Artifi-  
 cially by certein glasses, and instrumēt  
 made according to a secret part of that  
 knowe

Conrad & tillar if my name and my  
 In 8. pin I may the 8. pin I may the 8. pin

knowledge whiche is called *Catoptrica*,  
 and so peradventure some of them haue  
 been caused, but the most part doubtlesse  
 naturally, when the disposition of the  
 ayre, hath beene suche, that it hath recei-  
 ued the image of manye thinges placed  
 and done on the earth. And because it is  
 apte to receyue dyuerse images, as well  
 in one place as in another, these mon-  
 struous formes and straunge actions, or  
 stories proceade of the ioyninge of dy-  
 uerse formes and actions, as if two hi-  
 stories, were confusely paynted in one,  
 the whole picture would be straunge or  
 (as the Poet sayeth,) if a paynter to a  
 mans head, should set a horses neck, &  
 after dyuerse fethers. Sometymes also,  
 one image is multiplied in the ayre, into  
 many or infinite, as ar letters & crosses,  
 whiche fill all the ayre, even beneathe.  
 And the light of the sunne, receiued into  
 litle partes, maketh to appeare, as it wer  
 many smal starres. Let this suffice, con-  
 cerning these wonderfull apparitions:  
 once agayne admonishyng the Reader,  
 though I haue enterprysed to declare  
 these by naturall reason, yet beleuing  
 y<sup>e</sup> not so much as on sparrow falleth to y<sup>e</sup>  
 ground,

*catoptrica**Horatius*



grounde, without Gods prouidence, I doe also acknowledge Gods prouidence byngeth these to passe, to suche ende as befoze I haue shewed, bñing these causes, as meanes and instrumentes to doe them.

## The fourth booke of watry impressions.



Those be watry impressions, that consist moſte of water. In þ̄ treaty of the, are wont to be handled, these impressions, namely cloudes, rayne, dew, hoze frost, hayle, ſnowe, ſpringes, ryuers and the great ſea it ſelfe.

### ¶ Of cloudes.

*Cloudes.* A Cloude is a vapor colde and moyſte, drawn out of the earth or waters by the heate of the ſunne, into the mydle region of the ayre, where by colde it is ſo knit together, that it hangeth vntill either þ̄ waight or ſome reſolution cauſe it to fall downe.

The place whercin the cloudes doe hange is ſayde to be in the mydle region of the ayre, becauſe men ſee it is neceſſary that there ſhoulde be a colde whiche ſhould

should make those vapors so grosse, and  
 thicke, whiche for the most part are dra-  
 wnen so thinne, from the earth, that they  
 are inuisible, as the aier is. And although  
 they are knowne often time as *Aristotle* *Arist.*  
 wytnesseth, to be in the lowest region of  
 the ayre, neare to the earth, in so muche  
 that sometymes, they fall downe to the  
 earth, with great noyse, to y great feare  
 of men and no lesse losse and daunger.  
 Yet may it be reasonably thought, that  
 these cloudes were generated in y middle  
 region of the ayre, farre distant from the  
 earth, whiche by their heuines doe by  
 litle and litle sinke downe, lower into y  
 lowest region, and sometymes also fall  
 downe to the earth.

The commen opinion is, that they the heigh-  
 tye goe not hygher then nyne myle, whiche of the  
 because it leaneth to no reason is vns certayne.  
 cloudes.

*Albertus Magnus*, whose reason also  
 is to be doubted of, affirmeth, that the *Albert*  
 cloudes doe scarce excede thre myle in *Magnus*.  
 heyght, when they are hyghest.

And some let not to saye, that often-  
 tymes they ascend not past the halfe of  
 one myle, in heyght.

Againe



Agayne other pretending to find out the truth by Geometrical demonstrations, make it aboue fiftie myle to the place where the generation of cloudes is.

Howe these men take the distaunce from the earth, it is vncertain. Whether that they assigne y least distance, meane it from the hyghest part of the earth, as are hyl toppes, or from the common playne. Againe, whether they y assigne the hyghest distaunce to be from the lowest vallyes, of the earth, or from the hylle toppes.

The reason before shewed, moueth me to thynke that the moste vsuall & common generation, I meane the condensation or making thicke of these thinn vapors, into cloudes is in the middle region of the ayer. But for the distaunce of the cloudes, whē thei be generated I thinke they be sometime nine mile, sometime iij. myle, sometime halfe a myle, & somtyme lesse then a quarter of a myle from the earth.

¶ Of Mystes.

*Mystes.*

There be two kyndes of mistes, y one ascending, the other descending.

That whiche ascendeth, goeth vp out of the water, or y earth as smoke, but doth not

not commonly spread ouer all other parts,  
it is seen in ryuers and moyst places.

The other mist, that goeth down to-  
ward the earth, is when any vapor is lif-  
ted vp into the ayre, by the heate of the  
sunne, which not being strong enough  
to drawe it so high, that the colde maye  
knitte it: suffereth it after it is a lytle  
made thicke, to fall downe agayne, so it  
filleth al the ayre with the grosse vapors,  
& is called mistes, being vsually a signe  
of fayre weather. *Of empty cloudes.*

There be certen cloudes, y<sup>e</sup> ar empty, & *Empty*  
send no raine, they come of ij. sortes. *cloudes.*

For one sorte are the remanentes of  
a cloude, that hath rayned, whiche can  
not be couerted into water, for ther dye  
nes. Another sort is of them, that are  
drawen vp, of wett and dye places, and  
be rather *Exhalations* then vapors, that is  
they be drie, whot, & light, so that it wer  
harde for them to be turned into rayne.  
They loke whyte lyke flocks of woile,  
when y<sup>e</sup> lyght striketh into the. Ther be  
also empty cloudes, when y<sup>e</sup> wyndes haue  
dispersed abroad, any cloud, they ar sca-  
ttered euer al the skie, but these cloudes,  
though for a time they be emptye, yet  
because

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because they consist of such a substance as is watrye, they may be and are often tymes, gathered together and geue plentifulfull rayne.

● The colour of cloudes.

Of the collours of cloudes, we haue spoken in the second booke of fyre *Meteors*, where those collours and the causes of them, are described, whiche seeme to be fyerye, or may be thought to be inflammations or burninges, as be redde fyre and yealowyshe.

But besyde those, there be whyte, black, blew, and greene.

Whyte cloudes be thynne, and not very watery, so that the lyght receiued in them, maketh the to appeare whyte.

Black cloudes be ful of thick, grosse, and earthely matter, that maketh them looke so darke.

Blew cloudes be ful of thick, grosse, and earthly as the blacke, so the light receiued in them, maketh them to seeme blew.

Greene cloudes are altogether watry, resolued into water, whiche receyving into them the lyght, appear greene as water doth in a great vessell, or in the sea and ryuers.

¶ Of Rayne.

After the generatio<sup>n</sup> of cloudes is wel known, it shall not be hard to learn, *Rayne* from whence the rayne commeth.

For after the matter of the cloud being drawen vp, and by cold made thick, (as is sayde befoze) heate followynge, which is mooste commonlye of the Southerne wynde, or any other wynde of hotte temper, doth resolue it againe into water, so it falleth in droppes, to geue encrease of fruite to the earth, and moue men to geue thanks to God.

There be small showers, of small droppes, and there be great stormes of great droppes.

The showers with small drops, proceede either of the small heat, that resolveth the cloudes, or els of the great distance of the cloudes from the earth.

The streames with great droppes, contrariwyle, doe come of greate heate, resoluing or melting the cloude, or els of smal distance from the earth. Wherof we see an experiment when water is powzed forth, from an highe place, the droppes are smalle, but if it be not from height, it wyll either haue no droppes,

G. j.

or very



or very great.

The cause why rayne falleth in round droppes, is both, for that y<sup>e</sup> partes desire the same forme that the whole hath, whiche is round; & also that so it is best preserved against all contrary qualities, like as we see water, powdered upon drye or greasy thinges to gather it selfe into roundels, to avoyde the contrarietie of heate and dryenes.

why rain  
water is  
not salt.

It is not to be dimitted, that raine water although a great part of it be drawen out of the sea, yet moſte commienly it is ſweet and not ſalt,

The cause is, because it is drawne up in ſuche ſmall vapors, and that ſalt part is conſumed by the heat of the ſunne.

The rayn water doubtles, doth more encrease and cheriſhe thinges growyng on the earth, then any other water wherewith they may be watered, because the rain water, reteineth much of the ſunns heate in it, that is no ſmal comfort to all growyng plantes. The water that cometh from heaven, in rayne wyll ſooner come to putrefaction, or ſtinking, then any other, because it hath been made very ſubtile by heate, and alſo for that it is mixed

mixed with so many earthly & corruptible substances

Raine water that falleth in the sommer, by *Auicennas* iudgement, is more hol-  
some then other water, because it is not  
so colde and moist as other waters be,  
but whotter and lighter.

Sometime ther is salt rain, whē some  
*Exhalatio* which is whot & drie, is com-  
ing to the vapor wherof the raine consisteth. *Salt raine*

Sometime it is bitter, when sunning  
burnt earthly moisture is mixed with it. *Bitter*

This raine is both unholssom & also un-  
fruitful. In these countries, ther is great *raine.*

store & plenty of rayn, because the sunne  
is of such temperat heat, y it gathereth ma-  
ny vapors, & by immoderat heat doth not  
consume them. But in y East partes, in  
some whot countries, it neuer or seldom is  
seen to rain, as in Egypt & Siria, but in  
steade of rain Egypt hath y river Nilus,  
whose ouerflowings, doth maruolously  
fatten y earth. In Siria & other like coun-  
tries, they haue more plentifull dewe,  
then we haue, which doth likewise ma-  
ke their earth exceeding fruitful.

*Seneca* testifieth, that y rayn loketh no  
deper into the earth the tenn foot depe. *Seneca.*



Of the signes of Rayne.

Signes of  
rayne.

First if the skie be redd in the morning; it is a token of rayne, because these vapors which cause the rednes, wylbe shortly resolved into rayne.

If a darke cloude be at the sunne rising, in whiche the sunne sone after is hidde, it wyl befolue it, and rayn wyl followe. If then appere a cloude and after vapors are seen to ascend by to it, that betokeneth rayne.

If the sunne or Moone loke pale, loke for rayne.

If the sunne in the East, seem greater then commonly he appeareth, it is a signe of many vapors whiche will bring rayne.

If the sunne be seen very earlye, or felwe starres appeare in the nyght, it be tokeneth rayne.

The often chaunging of the wynds, also sheweth tempest.

The moste surer and certaine signe of rayne, is the southerne wynde, whiche with his warmenes, alwayes resolueth the cloudes, into rayne.

When there is no dewe at such tymes as by nature of the tyme, ther shold be, rayn

be, rayne followeth, for the mater of the dewe, is turned into the matter of wat-  
trie cloudes.

If in the West about the sunne set-  
ting, there appeare a black cloude, it wyl  
rayne that nyghte, because that cloude  
shall wante heate, to disperse it.

When muche dust is raysed vp, and  
when the woddess make a great noyse,  
some tempest is towards.

Hard stonnes wylbe moist and sweat  
against rayne, lamps, and candles, by  
spareling, frogges crying, trees brea-  
king, leaues falling, and dust clottering  
so:warne vs of a tempest.

Flees, flies and gnats, byght so: to  
ward a tepest, kyne feed greedely, birds  
seeke their vitels moze besilie, for in the  
grosse ayer disposed to rayne, their sto-  
mack is whoter and they moze hongry.  
But these kynde of signes pertaine not  
so properly to *Meteorologie*, as to mary-  
ners and husbādie, which haue a great  
many moze then these. And *Virgil* in his  
first booke of *Georgikes*, hath a great nom-  
ber for them, that lyst to learne. Where-  
fore let these hetherto suffice.



# A C C O R D E R

Of monstrous or prodigious rayne.

Of monstrous  
rayne.

**H**etherto we haue made mentiō only  
of naturall rayne, & that which is cō-  
mon whiche no man doth marueile at.  
But ther is sometime such rain, that woo-  
thely may be wondred at, as when it rai-  
neth, wormes, frogs, fishes, blood, milke  
flesh, stones, wheat, iron, wol, bricke and  
quicksiluer. For histories make mentiō,  
that at diuerse times, it hath rained such  
thinges, whose naturall cause for the  
moste parte, we will goe about to ex-  
presse, notwithstandinge accomptinge  
them amonge suche wonders, as God  
sendeth to be considered, for such endes,  
as we haue before declared. Wormes &  
frogges may thus be generated, when  
fat Exhalations are drawen vp into y<sup>e</sup> ayre  
by a temperature of whott & moist, such  
bermyen may be generated in the ayre, as  
they are on the earth, without copulatio-  
of male & female. Or els that with the  
Exhalations & vapors, their seede & egges  
are drawen vp, which being in y<sup>e</sup> clouds  
brought to form, fall down amōg y<sup>e</sup> rain.  
Likewyse the spawne of fishes, being  
drawne vp maketh fishes to raine out of  
the cloudes. The vehement heate of the  
sunne,

Wormes  
& froggs

Fishes.

Mylke.

sunne, in sommer and specially in whos  
contries, draweth mylke out of the pap-  
pes of beastes & cattel, whiche being car-  
ried vp in vapors and resolved again into  
mylke, falleth downe lyke rayn.

After the same maner the sunne also  
from places where bloud hath ben spilt, *Blood*  
draweth vp great quantitie of bloud, &  
so it rayneth bloud.

It raineth flesh, when great quanti-  
tie of bloud being drawen vp, it is clot- *Flesh.*  
tered together and seemeth to be flesh.

*Auicen* sayeth that a whole calfe fel out  
of the airc, and some wold make it seme *Auicen.*  
credible, that of vapors and Exhalations  
with the power of the heauenly bodics,  
concurring, a calfe, myght be made in  
the cloudes. But I had rather thynke,  
that this calfe was take vp in som storm  
of whylewynd, and so let fall again, the  
agree to so monstrous a generation.

It is a great deale more reasonable,  
that stoncs of earthly matter gathered *Stones.*  
in cloudes, shoulde be generated as we  
haue said befoze of y<sup>e</sup> thōderbolt. Yet som  
men thinke, y<sup>e</sup> wynd in caues of y<sup>e</sup> earth,  
breakig vpward violetly, carieth befoze  
it, earth & stoncs into y<sup>e</sup> ayze, which can



**Bryck.**

long abide, but fall downe and are contemned among prodigious rayne. *Exhalations* that be earthy and drawne out of clays, haue muche grosse substance in them, which gathered together, & by gret heat burned in the clouds, make bryck, which is no great meruayle.

**Heate.**

He that hath seen an egges shell full of dewe, drawen vp by the sunne into the ayre, in a May morninge, wyll not thinke it incredible, that wheat & other grayne, should be drawen vp in muche whotter countries then ours is, muche rather the meale or flower whiche is lighter.

**Wolle.**

A certayne mossynes, lyke woll, as is vpon quinses, wyllowes, and other yonge fruites and trees, is drawen vp of the sunne, among the vapors and *Exhalations*, which being clotted together, falleth downe lyke lockes of wolle.

**Quick  
syluer.**

Quicksyluer all men knowe, with small heate wyllbe resolved into moste thinne vapors. Whereof when quantitie is drawent vp, it falleth downe agayne. As it is redde, that once at Rome, it rayned quicksyluer, wherewith the brasen mony being rubbed, it looked like syluer.

Thus

*Titus Livius*, maketh mention, that  
it rayned chalke, whereof the cause can *Chalke*  
not be hydde to them, that reade howe *T. Livius*  
stone and bricke come into the ayre.

Iron hath also rayned out of y clouds,  
and sundry tymes, as histories wytnesse. *Iron*

Whereof this hath ben the cause. The  
generall matter of all metalles, *with*  
is quicksilver, and bymstone, *which* the  
speciall matter of mixtion, that maketh  
irone, weare all drawen vp together,  
there concocted into the metall, to come  
the straunge rayne of iron.

*Ausien* sayeth, he sawe a piece of irō  
that fel out of the cloudes, that weighed *Ausien*  
about an hundred pound weyght, wher  
of very good swerdes were after wardes  
made.

#### ¶ Of Dewe.

Dewe is that vapore, whiche in spring *Dewe*  
and *Autumne*, is drawen vp by the  
sunne in the daye tyme, whiche because  
it is not caried into the middle region of  
the ayre, abiding in the lower region,  
by colde of the nyghte, is condensed  
into water, and falleth downe in verie  
smalle droppes.

There is comen dewe & swete dew.



Manna.

One kynde of the sweet dewes, so called *Manna*, being whyghte lyke sugar, whiche is made of thicke and clammye vapors, whiche maketh it so to fall thicke and whyte. It falleth onely in the East partes. As for that *Manna* which God rained to the Israelites was altogether miraculous. In *Arabia* (as *Plinius* writeth) is a very pretious kynde of dewe, & is called *Ladanum*, whiche falling vpon the herbe *Cusus*, & mixed with the iuyse of that hearbe which goates do eate, is gathered of goates heares and kept for a great treasure. Ther is another kind of swete dewes, that falleth in England called the meldewes, which is as sweet as hony being of such substance as hony is, drawe out of sweet herbes & flowers.

Plinius.

Arabia

Ladanum.

Cusus.

Bitterdew

There is also a bitter kynde of dewe that falleth vpon herbes, and lieth on them lyke bryann or meale, namelye because it is of an earthly *Exhalation*, & so remayneth, when the moyster is drawe away: this dewe kylleth herbes.

The commē dewe, dronke of cattel, doth rotte them because the matter is ful of viscositie, bringing the to a fluxion.

Ther be thye thinges, & hinder dew from

from falling, that is great heate, great colde, and wynde. For dewe falleth in the most temperat calme tyme.

¶ Of hoare froste.

Hoare frost or whight frost, is nothing els but dewe congeled by euermuche colde. The South and East wynd, doth cause dew, but the North and Northerly wyndes, doe fryese the vapors, and so it becommeth hoare froste, whiche if that excessive colde had not been, should haue turned into dewe.

The dewe and the hoare frost, agree in thre thinges, namely in matter, in qualitie of tyme, and place of their generation. In matter they agree, for they are both generated of a subtile & thynne vapor, also small in quantitie.

In qualitie of tyme they consent, for both are made in a quiet & calme tyme, for if there were great wynde, it would byrue away the matter, and so cold ther be no generation.

Thyrdly they are both generated in the lowest region of the ayre, for (as Aristotle affirmeth) vpon high hilles, ther is neither dewe nor hoare frost.

They differ also in thre thinges. For the



The hoare froste is congeled befoze it be  
turned into water, so is not the dewe.

Secondly, the dewe is generated in  
temperate weather, the whight froast  
in colde weather.

Last of all, whote wyndes, as the  
South and East do cause dewe, but cold  
wyndes as the Northe and West doe  
cause hoare froast.

Hoare froast doth often synke, be-  
cause of the sinking matter whereof it  
consisteth, which is drawen out of lakes  
and other muddy and sinking places.

¶ Of Hayle.

Hayle.

Hayle is a hotte vapor in the mydle re-  
gion of the ayre, by the cold of that re-  
gion, made thicke into a cloude whiche  
falling downe to the foden colde of the  
lowest region is congeled into Ice.

There be so many kyndes of hayle,  
as ther be of rayn. The fashion of hayl,  
is sometyme round, whiche is a token yf  
it was generated in the mydle region of  
the ayre, or very neare it, for falling fro  
hygh, the corners are worne away.

When the hayle stones are square,  
or thze cornered, the hayle was genera-  
ted neare the earth.

Often

Often times, there is harde a great sounde in the cloudes, as it were of thunder, befoze hable, or as it were of an army fighting &c. the cause is, that vapors of contrarie qualities, beinge inclosed in the cloude, doe strue to bzeake out, & make anoyse euen as colde water doth put into a seathing pot.

In spryng and haruest tyme, is often hable, seldome in sommer and wynter. In wynter there wanteth whot vapors, in sommer, the lowest regiō is to whot, to congele the rayne falling downe. In spryng and *Autumne*, there wanteth neither whot vapors, to resist the colde, nor sufficient colde to harden the droppes of that whot shower of rayne.

The hablestones are somtimes greater, and sometimes lesser: greater with greater colde, and lesser with lesser cold.

There is seldome haile in the night, for want of whot vapors to be drawē vp.

Sometyme hable & rayne, falleth together, when the latter end of the cloud for want of colde in the lowest region, is not congeled.

Hable stones are not so cleare, as Ice, because they are made of grosse & earthy

vapors,



vapors, it is congeled of cleare water.

Hayle is swoner resolued into water, then snowe, because it is of a moze sodde and swyft generation.

¶ Of Snowe.

*Snowe.*

Snowe is a cloude congeled by greates colde, before it be perfectlye resolued from vapors into water.

Snowe is whyght, not of the proper colour, but by receiuing the lyghte into it, in so many small partes as in some, or the whyghte of an egge beaten.

Snowe is often vpon highe hilles, & lieth long there, because their toppes are colde as they be neare to the mydle region of the ayre. For oftentimes it rapeth in the vallye when it snoweth on the hilles.

*Originall  
of Crisfall*

Snowe melting on the high hilles, and after frozen agayne, becommeth so hard that it is a stone, & is called *Crisfall*. Other matters of snowe because they are comen with raine, are nedeles to be spoken of. To be shorte, sleet is generated euen as snow, but of lesse colde, or els beginneth to melte in the falling.

Snowe causeth thinges growing to be fructfull, and encrease, because the colde

cold dryueth beate vnto the rootes, and  
so cheryueth the plantes.

**O**f Springes and Rivers.

The generation of springes is in the  
bowels of the earth, & therfore some *Springes.*  
thing must be sayde of the bodye of the  
earth. The earth though it be solide and  
massy, yet hath it many hollow gutturs  
and baynes, in whiche is alwayes ayre  
to auoyde emptines. For the ignorant  
in Philosophie must be admonished, *Nothing*  
all thinges are full, nothing is emptye, *is empty.*  
for nature abhorreth emptines, so that  
where nothing els is, there is ayre and  
*vapors*, whiche by colde as it hath often  
ben sayde, wylbe resolued into droppes,  
as we see experience in marble pillers &  
suche lyke harde stonnes, towards raine.  
This aier and *vapors* therfore being tur  
ned into droppes of water, these dropps  
sweet out of the earth, and fynde some  
issue at the length, where many beyng  
gathered together make great aboun  
dauce of water, which is called a foun  
taine or springe. The cause why suche  
springes doe runne continually, is be  
cause that aier can neuer wante in those  
baynes, which by colde will alwayes be  
turned



turned into water, so that as fast as the water runneth forth, so faste is aye a gayne receyued into the place, whereby it commeth to passe, y so many springes are perpetuall, and neuer dried. But if any be dried vp, it is in a whot sommer, and such springes also they be, whose generation is not depe in the earth, & therefore the vapors may be made drye & the earth warme, so the spring may faile.

¶ There be foure kyndes of springes, fountains, brookes, ryuers, & lakes.

¶ Of Fountaines.

**Fountains.** Fountaines be small springes, which serue for wells and conductes, when there is but one place, where the water is generated, and that is not very abundant, ether because it is of small compass, or small baynes and not many.

¶ Of Brookes.

**Brookes.** Brookes, boznes, or fordes, be small streames of water, that runne in a channell, lyke a ryuer. They are caused wher either the spring occupieth a great compass, or els two or thre small springes meate together in one channell.

¶ Of Ryuers.

**Ryuers.** Ryuers are caused by the meatyng together

together, not only of many springs, but also of many brookes & fordes, which being receiued in diuerse places, as they passe ar at the length, caried into y<sup>e</sup> broad sea, for the mosse part. Howbeit some riuers are swallowed vp into the earth, which perchaunce runne into the sea by some secret and vnknown channels, some riuers there be, that hide their heddes vnder the earth, and in another place, farre of bzeake out againe. They wyte also, that some riuers being swallowed vp of the earth, in one Ilande do runne vnder the bottome of the earth & sea, and bzeake forth in another Ilande. There be also many great riuers y<sup>e</sup> run vnder the earth in great caues which neuer bzeake forth: Aristotle sheweth of poudes & lakes, that be vnder the earth. And Seneca speaketh of a pond that was founde by suche as digged in the earth, with fishes in it, & they that did eate of them died. As eeles y<sup>e</sup> be founde in darke places, as wells that haue been dammed vp &c. ate popsoni.

## ¶ Of Lakes.

Lakes ar made by the meting together of many riuers, brookes & springs into one deepe valley. Whereof some are so

H. J.

great

Arist.  
Seneca.

Lakes.



great, that they haue the name of seas; as y<sup>e</sup> great lake called *Hircane*, or *Caspia* sea. These lakes sometymes vnlade the selues into the sea, by small riuers, somtymes by passages vnder the earth.

The cause of the swiftnes of ryuers, is double, for they are stoppte either for the great aboundaunce of waters, or els because they runne downe from an hilly place, as the ryuer *Rhene* falleth downe from the toppe of wonderfull hyghe hylles.

¶ Of whote bathes.

Whote  
bathes.

SOME waters that are generated and flowe out of vaynes of bymestone, are sensyibly warme, and some very whott, because they runne out of whot places. These waters being also drying by nature, are wholsome for many infyrmities, specially breakyng forth of scabbs. &c. Suche are the bathes in the *Welste* cuntrye, and *S. Ann.* of *Buckstones* well in the North part of *England* and many other els where.

¶ Of the diuerse tastes that are perceiued in wells.

Tastes of  
Waters:

For a generall reason, the waters receyue their tast of that kynde of earth, through

through whiche they runne as through a strainer. Some salt, that runn through salt baynes of the earth, some sweet, that be well strayned, or runne through such myneralls as be of sweet taste.

Some bytter, y<sup>e</sup> flowe out of such earth, as is bitter by addustion or other wyse.

Some solwer or sharpe lyke vineger, which runne through baynes of allum, coporous, or suche mineralls.

Aristotle wryteth of a well in Scicilia, whose wa-

ter the inhabitauntes vsed for vyneger.

In Bohemia neare to the citie called Bi-

len, is a wel that the people vse to drinke

of in the moynyng, in steade of burnt

wyne. And in dyuerse places of Germania

ny, be sprynges, y<sup>e</sup> tast of such sharpnes;

Some haue the taste of wyne, as in

Paphlagonia, is a well that maketh men

dronke whiche drynke thereof: whiche

is because that water receyueth the fu-

mosite of bymstone, & other mineralls

through which it runneth, and so filleth

the brayne as wyne doth.

A recitall of such ryuers and springes, as

haue maruelous effectes wherof no naturall

cause can be assigned by most mē, although

some reason in a few may be founde.

H. V.

Clitumnus

Aristotle

Well wa

ter vsed

for vine

ger.

Bohemia

Paphla

gonia



# A GOODLY

*marcellus*  
*water.*

*Clitumnus.*  
*Propert.*

*Boetia.*

*Melas.*

*Seneca.*

*Libia.*

*Seneca.*

**C***litumnus* which maketh ore, & drinke of it whyght, it is a ryuer or spring in *Italie.* *Propert. lib. 3.* This may be & qualitie of the water very flegmatike. In *Boetia* is a ryuer called *Melas*, & maketh thepe blacke if they drinke thereof.

*Seneca* speaketh of a ryuer & maketh redde heares. These two with the fyrst, may haue some reason, that the qualitie of the water may alter complexion, and so the colloz of heares may be changed, as we see in certaine diseases.

In *Libia* is a spring, that at the sunne ryfing and setting, is warme, at midday colde, and at midnight very whott: this may be, by the same reason that welwa-  
ter is colder in sommer the it is in wynter. *Seneca* wyrteth, that there be ryuers, whose waters are poyson, this maye be naturally, the water running throug poysonous minerals, taking much fume of them. Other wells that make wodde and all thing els that be cast into them stones, such welles be in *Englande* the cause is great colde.

Another well, maketh men madd & drinke thereof. This also may haue as good reason as that whiche maketh me-  
drinke.

Drinke. As also that well which maketh men forgetful by obstruction of the brain.

The same Seneca speaketh of a water that being drinke, prouoketh vnto lust and lechery. And why may not that qualitie be in a water, which is mixed with diuerse mineralls, and kindes of earth, which is in herbes, rootes, fruit. liquors.

S. Augustin speaketh of a well in Egypt, in which burning torches are quenched, and being befoze quenched, are lighted. S. Augustine.

Among the Garamantes is a well so colde in the daye, that no man can abyde to drinke of it, in the nyght so whott, that none can abyde to fele it. Garamantes.

It is incredible, that is wrytten of a well in Scicilia, whereof if theues did drinke they were made blynde. Scicilia.

In Idumea was a well, that one quarter of a yere was troubled and moddy, the next quarter bloody, the third green, and the fourth, cleare. Idumea.

Seneca wryteth of another well that was six houres full and runninge ouer, and six houres decreasing and emptie, perchance, because it ebbed and flowed, with the sea, or some great ryuer, that was neare it. Seneca.



# A G C O D L Y

*Anthracinus.*

In the hill *Anthracinus*, is sayde to be a well, whiche when it is full, signifieth a fruitefull yeare, when it is scarce and emptye, a barren and deare yeare. The sufficiens of moysture, maketh fertilitie, as the wante causeth the contrary.

*Hungaria.*

Men saye there is a Ryuer in Hungarie, in whiche Iron is turned into coper. Whiche may well be, seynge inke in whiche is but small coperus, and artificially myred, of Iron, dothe counterfeit coper in collour. In this streame maye be muche coperus, and that is naturally myred.

*Seneca  
Theophrastus.*

Both *Seneca* and *Theophrastus*, wytnesse, y waters there be, whiche within a certayne space being dronke of sheepe, as (*Seneca* sayeth) of byrdes (as *Theophrastus* will haue it) changeth their collours frō black to whyte, & frō white to black.

*Vitruvius  
Arcadia  
Nonacrinus.*

*Vitruvius* wyrteth, that in *Arcadia*, is a water called *Nonacrinis* whiche no vessell of syluer, brasse, or Iron, can hold, but it breaketh in pieces, and nothyng but a mules hooft, wyll holde it and conteyne it.

*Illyria.*

In *Illyria*, garmētes y are holdē ouer amost cold well, ar kindled & set on fyre.

In the

In the Ile of *Andros*, where the temple of *Bacchus* stode, is a well that the first day of January floweth wyne.

*Andros*  
*Bacchus*

*Isidore* sayeth, there is a well in *Italy*, that healeth the woundes of y<sup>e</sup> eyes.

*Isidore*

In the Ile of *Chios*, is a well that maketh men dulwitted, that drinke therof.

*Chios*

There is another that causeth men to abhorre lust.

*Lechnus* a spring of *Arcadia*, is good against abortions.

*Lechnus*

In *Scicilia* are two springs of which one maketh a woman fruitfull, and the other barren.

*Scicilia*

In *Sardania*, be whote welles that heale sore eyes.

*Sardania*

In an Ile of *Pontus*, the ryuer *Astares*, overfloweth the fieldes in whiche the sheepe that ys fedde, doth geue black mylke.

*Pontus*  
*astares*

In *Acthiopia*, is a lake, whose water is lyke oyle.

*acthiopia*

Also manye springes of oyle haue broken forth of the earth, which cometh of the viscositie or fatnes of y<sup>e</sup> same earth.

The lake *Clitorie*, in *Italye*, maketh men that drinke of it to abhorre wyne.

*Clitorie*



# A G G O D L Y

*Anthracinus.*

In the hill *Anthracinus*, is sayde to be a well, whiche when it is full, signifieth a fructefull yeare, when it is scarce and emptye, a barren and deare yeare. The sufficiens of moysture, maketh fertilitie, as the wante causeth the contrary,

*Hungaria.*

Men saye there is a Ryuer in Hungarie, in whiche Iron is turned into coper. Whiche may well be, seing inke in whiche is but small coperus, and artificially myred, of Iron, dothe counterfeit coper in collour. In this streame maye be muche coperus, and that is naturally myred.

*Seneca  
Theophrastus.*

Both *Seneca* and *Theophrastus*, wytnesse, y waters there be, whiche within a certayne space being dronke of sheepe, as (*Seneca* sayeth) of byrdes (as *Theophrastus* will haue it) changeth their collours fro black to whyte, & fro white to black.

*Vitruvius  
Arcadia  
Nonacrinus.*

*Vitruvius* wyrteth, that in *Arcadia*, is a water called *Nonacrinis* whiche no vessell of syluer, brasse, or Iron, can hold, but it breaketh in pieces, and nothyng but a mules hofe, wyll holde it and conteyne it.

*Illyria.*

In *Illyria*, garmetes y are holde ouer amost cold well, ar kindled & set on fyre.

In the

In the Ile of *Andros*, where the temple of *Bacchus* stode, is a well that the first day of January flowed wyne. *Andros*  
*Bacchus*

*Isidore* sayeth, there is a well in *Italy*, that healeth the woundes of y<sup>e</sup> eyes. *Isidore*

In the Ile of *Chios*, is a well that maketh men dulwitted, that drinke therof. *Chios*

There is another that causeth men to abhorre lust.

*Lechnus* a spring of *Arcadia*, is good against abortions. *Lechnus*

In *Scicilia* are two springs of which one maketh a woman fruitfull, and the other barren. *Scicilia*

In *Sardania*, be whote welles that heale soze eyes. *Sardania*

In an Ile of *Pontus*, the ryuer *Astares*, overfloweth the fieldes in whiche the sheepe that be fedde, doth geue black mylke. *Pontus*  
*astares*

In *Aethiopia*, is a lake, whose water is lyke oyle. *aethiopia*

Also manye springs of oyle haue broken forth of the earth, which cometh of the viscositie or fatnes of y<sup>e</sup> same earth.

The lake *Clitorie*, in *Italye*, maketh men that drinke of it to abhorre wyne. *Clitorie*



# A GOODLY

**Pentafium.** The lake *Pentafium* (as *Solinus* saith) is deadly to serpentes & wholsom to me.  
**Solinus.** *Seneca* wyrteth of certeyn lakes that

**Syria.** wyll beare men which can not swim.  
 And that in *Syria*, is a lake in whiche  
 byrckes do swimme, and no heuy thing  
 wyll sinke.

**Rhenus.** It is said, that the ryuer *Rhene* in *Ger*  
many wyll drowne basterd childe that  
be cast in it, but dyue alonde them that  
be lawfully begotten.

**Hypanis** The ryuer *Hypanis* in *Schithia*, euery  
**Schithia.** day byrnygeth forth litle bladders, out of  
 whiche flies do come that die the same  
 nyght.

**Matrona.** *Matrona* the ryuer of *Germany*, as  
 common people saith, neuer passeth day  
 but he taketh some praye.

## ¶ Of the Sea.

**The sea.** The sea in this treatise, hath place as  
 a mixed substance, for els the clemēt  
 of waters being simple, were not here  
 to be spoken of.

The natu The sea is the naturall place of the  
 rall place waters, into which all ryuers and other  
 of the wa waters, are receiued, at the length.

ser. } And here it is to be vnderstanded, y  
 the very proper & naturall place of the  
 water,

water, were to couer al the earth, for so  
 be the elementes placed. The earth lo-  
 west, & round about the earth, the water,  
 about the water the ayre, and about the  
 ayre the fyre. But God the most mighty  
 and wyse creatoz of all thinges, that the *Gen. i.*  
 earth might in som partes be inhabited  
 of men and beastes, commaunded the wa-  
 ters to be gathered into one place, that  
 the drie londe might appeare, and called  
 the drie land earth, and the gathering of  
 waters he called seas.

In the sea are these two thinges to  
 be considered, the saltnes, & the ebbinge  
 and flowyng.

*¶ Of the saltnes.*

The saltnes of the sea, accordinge to *Arist.*

*Aristotles* mynde is caused by y sunn,  
 that draweth from it all thinne & swete  
 vapors, to make rayne leauing the reste  
 as the setling oz bottom, whiche is salt.

But men of oure tyme, peraduenture  
 more truely, do not take this for the on-  
 ly and sufficient cause, to mak so great a  
 quantitie of water salt, but say, that the  
 sea by Gods wysdome is gathered into  
 such valleys of the earth, as were other  
 wyse barren & vnfruitful, such earthes

*H. b.*

are



# A GOODLY

are salte, the sea water then mixed with that earth, must needes be salt, els ryuers by *Aristotles* mynde, should be salt as well as the sea. The Reader maye chuse whiche opinion is most probable.

¶ Of the ebbing and flowyng.

Ebbinge  
and flowyng.  
*Aristot.*

The ebbing and flowyng of the sea, as *Aristotle* seemeth to teach, is by reason of Exhalations, that be vnder the water, whiche dryue it to and fro, according to contrary boundes, and limites, as vppwarde and downwarde, of wyde and narrowe, deepe and shallowe. This opinion of *Aristotle* also, as more subtile the true experience teacheth men to mislike & to ascribe the cause of ebbing & flowyng to the course of the moone, which ruleth ouer moysture, as the sunne doth ouer heate, for fro the new Moone to the full, all humors do encrease, and from the full to the newe moone, decrease agayne. Also the very true tyme of the ebbing and flowyng may be knowen, by the course of the Moone. With whome as the ladye of moysture, we will close vp the fourth booke of moiste and watry impressiōs.

The

# The fift booke of earthly

*Meteores* or bodies perfectly mixed.



His last treatise conteyneth suche bodies whose chief matter is the earth, & are called perfectly mixed because they are not easily resolved in to the chiefe matter, wherof they are generated. These are deuided into foure kyndes. The first be diuerse sortes of earth, the second be liquors concreat, the third be metalls and metalliques, the fourth be stones. This deuision is not altogether perfect both for that there be many of these minerals whiche partake of two kyndes, & also for that the names of some of these kyndes may be sayde of other. Yet minding as plainly as can be, to declare the thynges them selues, the controuersye and cauillation of names, shall not greatly trouble vs. Especially seying we pretende not to teache Philosophers, but such as nede a ruder explainer instruction. They may therfore be content w<sup>th</sup> this diuision, which shal not serue them to dispute of these matters, but to vnderstand the truth of these

*Earthly bodies.*



things that they desyre. Of these folow,  
therfoze we will speake oꝛderly and ge-  
nerally, not mynding to intreate of eue-  
ry particuler kynde (foꝛ that were infi-  
nit) but to open suche vniuersall causes,  
as they whiche haue witte, may learne,  
(if they list) to apply vnto al particulers.

## ¶ Of earthes.

Of earthes

The earth is an element, one of the  
foure, cold and drie, moſte groſſe and  
ſolyde, moſte heauy and weighty, the le-  
weſt of all other in place. When I ſaye  
an element, I meane a ſimple body vn-  
compounded. This earth is no *Meteore*,  
but as it was ſhewed in the water, to  
end ther ſhould be generatiō of things,  
there is no element that we can haue,  
whiche is pure and ſymple, but all are  
mired and cōpounde. Our fyre is groſſe  
and compounded, ſo is our ayer our wa-  
ter, and our earth. But the earth nota-  
bly and aboue the reſt is mired. Foꝛ the  
puer and naturall earth is drie and cold,  
but we ſee much to be moiſt, and much  
to be hoat. The naturall earth is blacke  
of colloꝛ, but we ſee many earthes white  
many yelow, and many redde. So that  
firſt the greateſt part of y<sup>e</sup> earth is mired  
with

with water, that maketh it to cleave together, with ayer and some fyre, which make an oyle fatt or claymy earth, as is claye made. &c. Another great part is dyed not into the natural dienes of the first qualitie, but as a thing ones mixed and after dyed, ether by to cold, as sand grauell, &c. or els by heate, as chalke, oker &c. And yet somewhat moze plainly and particularly to discourse vpon these causes, admitting the naturall collour of the earth to be black, of p<sup>r</sup> water to be blewe, of the ayer to be whyte, & of the fyre to be ruddy, it followeth that vpon the miction of these collours, or chief domination of them, al thinges hath their collour. The grosse substaunce of the earth therefore beinge diuersly mixed with other elementes, and those myxtures againe beinge estones altered, by dyuerse and sometime cōtrary qualities, hath brought forth so manye kyndes of earth, as claye, marle, chalke, sand, grauell &c. Claye is mixed with fat moisture takyng his colloure of the mixture with redde from whyte, but beyng colde, it is not so fructfull as marle, whiche is not alwayes so moiste as it. Chalke is an  
earth



earth by heat cōcocted, after diuerse mitions and dried vp. Other both yelow & redde with suche like are of the same nature with mirtid of redde moze or lesse.

Sande and grauell are dried erthes, as it were froasen by colde, grauell is grosse and apparent, sand though it be finer, is of the same generation cōsisting of many small bodies, which ar cōgeled into stones. Sād semeth to be clay dried by cold and coacted together into small stones, wherof some ar thzough shining which were the moyst partes, the thicke were of the grosse parte. The same is grauel, but of greater stones consisting. The lyke iudgement is to be geuen of all other kyndes of earth, whose generation by the similitude of these, wyl not be very harde to fynde out. They that lyst to knowe the diuerse kyndes of earthes, must haue recourse to *Plinius*, *Cardane*, and other wyters, that recite a great number of them, but these are the chief and most commen kyndes.

*Plinius.*

*Cardanus*

¶ Of liquors concreat:

V V E take not lyquors cōcreat so largely, as the worde dothe signifie, for than shoud we compzehende, bothe the o

the other kyndes following. But onely those liquors, called in latin *Succi*, which are as it were middle betwene metals & stones, of whiche some being fat & oyle, do burne, as brimstone, seccoles, geate, *bitumen*, &c. and the kyndes of all these. other some doth not burne, as salt, alū, coperus, saltpeter, &c. and the kindes of these. Of the first sort, which are generated of earthy & ayry vapors, fumes & *Exhalations*, the chief & most notable, is brimstone, which semeth to be the matter of all drie & whot qualities, y<sup>e</sup> ar in earthly *Meteores*. The rest are generated of such lyke vapors as brimstone is, but thē they be diuersly mixed. As y<sup>e</sup> coles, haue much earth mixed with brimstone. Gette, seccmeth to be all one, but better concocted then coles. Of amber is great contentiō whether it be a mineral, or y<sup>e</sup> sperme of an whale, for it is found in the sea, cast vp on the shore. Now y<sup>e</sup> whales seede, being of the very same qualities, is takē more & lesse cōcreate of diuers hardnes, som almost as hard as amber, som softer, & som liquid. Yet *Cardan* plainly defineth, that *Cardanus* amber is a minerall. Whether he haue reason or experiēce, cōtrary to y<sup>e</sup> vulgar opinion,



opinion, let them consider that list to cō-  
tende. These minerals that will resolue  
with fyze, it is apparent, that they were  
concreat with colde. In that they burne  
it is manifest, they haue a fatte and clā-  
my substance, mixed with them. As the  
other kynde hath not, whiche wll not  
resolue so well with fyze, as w water,  
whiche be salt, coperus, saltpeters, &c.  
these burne not being watry, earthy, &  
not fatt, vinctuous, noz clammy.

These be of diuerse collours, black  
as coles and geat, because ther is much  
earthly substance mixed with their sul-  
phureus matter. Some be there as salt  
and alume, hauing a substance watry,  
dzyed, and concreat. Coperus is greane,  
because it hath muche colde matter that  
is blwe, mixed with it. Salt the most cō-  
men and necessary of all these liquors  
concreat, that be moist & not fatty, hath  
two maner of generations, one natu-  
rall, and the other artificiall. The natu-  
rall generation, is when it is first gene-  
rated, in the earth, after commeth the  
water of the sea, and is infected with it,  
out of whiche the salt is againe artifici-  
ally gathered. Of these liquors concreat  
be those

be those strange wells and springes infected, of whiche was spoken, in the latter ende of the fourth booke. Most notably brymstone causeth the whot bathes, and burneth in *Aetna*, of *Scicilia*, and *Vesuvius* of *Italpe*, casting vp the pumise stones, of whiche is no place here to en-  
*Aetna & Vesuvius*

Of Metalles. *Metals*

**M**etalles be substaunces perfectlye myred, that wyl melte, with heate, and be brought into all manner of fashions that a man wyl. Of these the Alchymistes saye, there be seven kyndes, to aunswere to the seven Planetes. Gold, syluer, copper, tynne, lead, Iron & quicksyluer, that they cal *Mercury*. But sauing their authorities, quicksyluer is no more a metall, then brymstone, whiche is as necessarye to the generation of metall, as quicksyluer is. For they all agree, that all metalles are generated of sulphur, that is brymstone, whiche because it is whot, they call the father, and *Mercury* that is quicksiluer, whiche because it is moyst, they call the mother. So by as good reason, may they call brymstone a metall, as *Mercury*. Then there remaineth,  
*Metalls.*  
*Mercury*  
*Sulphur*  
 I. I. neth.



neth but six perfect metallis, Gold, Syluer, Copper, Tinne, Lead, and Iron.

¶ Of Gold.

Golde.

Why gold  
rusteth  
not.

The opini-  
on of the  
Alchemi-  
sts.

That moſte vnprofitable and hurtfull  
of al metallis golde, which moſt men  
diſpraye, and yet all men would haue,  
is of all other metalles the rareſt, it is  
only pfect, all other be corruptible. Gold  
neuer corrupteth by ruſt, becauſe it is  
pure from poiſonous infection & moſt ſo-  
lide, that it receiueth not the ayre into  
it, which cauſeth all thinges to corrupt.  
It is perfectly concocted with ſufficient  
heate, and mixture of Sulphur, all o-  
ther metallis, either are not ſo well con-  
cocted, or els they haue not the due qua-  
titie of brimſtone. This opiniõ hath alſo  
place among the Alchemiſtes, & becauſe  
nature in al her workes, ſeketh the beſt  
ende, ſhe entredeth, of al metals to make  
gold, but being let either for wante of  
good mixture, or good concoction ſhe bring-  
eth forth other metals, in deede not ſo  
precious, but much more profitable, & the  
leſſe pretius, the more profitable, for ther  
is more vſe to the neceſſitie of mannes  
life, in Iron and lead, then is in golde, &  
ſyluer. But either the bewtie, or the per-  
fection,

featiō, or at leſt wyſe the rarenes of gold  
 & ſiluer, haue obtayned the eſtimatiō of  
 al men, ſo y<sup>e</sup> for them is ſold al maner of  
 thinges, holy, & p<sup>r</sup>ophane, bodely & ſpirt-  
 uall. What paynes doth not men take  
 to wyne gold: euery man hath one way  
 or other, to hunt after it, but y<sup>e</sup> Alchymiſt  
 deſpiſing all other wayes as ſlow, vnna-  
 turall, & vnprofitable, laboureth ether to  
 helpe nature in her worke, as of vnper-  
 fect metals to make p<sup>r</sup>fect, or els to force  
 natur to his purpoſe, by his quinteſſences &  
 elixors, ſo that what by purging, what by  
 cōcocting, what by mixing of ſulphur &  
 quickſiluer, & muche other like ſtuffe, at  
 length he turneth the wrong ſide of his  
 gowne outward, all the teeth out of his  
 head, & his body frō helth to a palsey, and  
 then he is a Philoſopher, and ſo he will  
 be called.

¶ Of Syluer.

Syluer the moſt pure metalle, next vn-  
 to golde, hath indifferent good conco-  
 ction in the earth, but it wanteth ſufficiēt  
 heat in the mictur, that maketh it pale.  
 It is ſounde as they ſaye, running into  
 diuerſe vaines as all other metalles be,  
 but this moſt ſpecially, after y<sup>e</sup> ſhape & fa-  
 ſhion of

Syluer.



of a tree, lying alonge with a bodye or  
 stocke of proportion lyke to the body of  
 a tree, also with armes, bzaunches, lea-  
 ues and fruides. This metall syluer,  
 lacketh sufficient heate, and therfore co-  
 meth neyther to the collour, soliditie,  
 nor perfection of golde, and is genera-  
 ted in colde countries, neare vnto the  
 North, and South poles. In so greate  
 quantitie, that hasbandmen, when they  
 plowe the grounde turne by syluer, a-  
 mong the clottes in their dayly labours.  
 Whiche they doe hyde, and conceale,  
 least the greedy Princes, for couetous-  
 nes of the metall, should ouerturne and  
 destroye their lande. The golde mynes,  
 are contrarywyle, moſte founde in the  
 whote countries of *India* and *Aethiopia*,  
 because in them is sufficient of heate for  
 that unhappy generation.

This syluer also, the Alcumistes  
 woulde fayne make by arte, but *Mercury*  
 the chief maister of the worke, is so sub-  
 till, and so slye, that nothinge can holde  
 hym, nothing can kyll hym. For if the  
 glasse be not very thyck, he wyll soone  
 breake out of pryson, and so there is no-  
 thyng left.

## ¶ Of Copper.

Copper in colour comming nearest to golde, beyng not solyde, noz massy, (for of all metall golde is the heaviest) geueth waye to corruption, beyng infected with that greane minerall copperus. Hereof be dyuerse kyndes, brasse, latine and suche lyke, whiche differ in digestion, the copper beyng purest, is of best digestion and nearest vnto golde, and so the rest in lyke degrees. Copper is mosste lyke to syluer in the wayghte, and in the hammering, wherefoze the Alchimistes haue leatned to make it whyte, that it deceyueth mens syghte & handlyng, but the Goldsmithes doe easily trye it & by the test of counterfect siluer, maketh copper agayne. Copper oz brasse; doth alwaye growe neare vnto the myne of copperus, whiche runnyng with it in the digestion oz naturall concoction, hyndzeth it of perfectiō, maketh it to stynke, and to be eaten of a greane rust. Suche a doe the Alchimistes haue to turne it into golde, if it might be, they dispute very reasonablye, and conclude almoste necessarily in their talke, that it may be conuerted into golde as, a body,

that

Copper

Copperus



## A G C O D I Y

that wāteth litle of perfectiō which may be easely added vnto it. But in conclusiō of the worke, it is an harder matter, to bryng it to passe, then it was to purpose befoze they had done it, to builde an abbay at euery myles ende, vpo Salisbury playne, as one was mynded.

### ¶ Of Tinne.

*Tinne.*

**T**inne, wherof great plenty groweth in the west partes of Englande, in bewty and collour cometh nearest to siluer, & of siluer wāteth nothing, but softnes & hardnes. For tinn is a rawe & vndigested metall, also very poore & vncompact, which causeth it to crashe, when it is broken or bitten. So it faileth of heat, in the comitiō & also sufficiēt digestiō in the earth. Otherwise it is a fayze & profitable metal, to serue y<sup>e</sup> vse of thē, vnto whom siluer & gold are not so plentiful.

### ¶ Of Lead.

*Lead.*

**L**ead also found in great abūdance in this realm, is a rawe & vndigested metal, as tin is, but yet of better digestiō thē comitiō. For it is mired, w<sup>th</sup> a grosse earthy substance, which maketh it to be in colloz so black, & so fowl to corrupt. So that of y<sup>e</sup> same fumes & exhalatiōs, which if they

If they had ben pure & well digested, if þe place & matter wold haue suffered, shold haue ben concreat into siluer, for lack of the same, lead is generated, which coming plentifully, doth better seruice the syluer.

¶ *Of Iron.*

**I**ron the most necessary and profitable *Iron.* of all other metallis, & yet as ill vsed of many as any other, is generated of such substance as syluer is, but myred with a redde minerall, whiche cateth it with redde ruste, and also being of two extreme digestion, passing all other metallis in hardenes. And as other metals to the perfection of syluer, want sufficient coction, wherby they comie not to the same hardenes: so Iron passeth and exceedeth syluer in immoderate digestion. But though it come not to the perfection of syluer, God forbide that al Iron had been touned into syluer, for then we should moze haue mysted it, then syluer or golde, the want of whiche would hinder vs nothyng at al.

¶ *Of Quicksilver.*

**T**hough quicksilver, be no metal, yet *Quick-* because it is the mother of al metals, *silver.* some thyng is here to be spoken of it.

I. iiij.

There



## A GOODLY

There be diuerse and sondrie opinions, both of the generation, and also the qualities of it, whiche make the generation to be harde to fynde out. For if the qualitie were certainly agreed vppon, there were an easier waye founde, to trye out the generation. Some affirme, that it is exceeding whott, and that they wolde proue, by the swyfte percing therof into other thynges, that be porose.

Other saye, it is exceedyng colde, & that they proue, by the exceedyng weyght of it. As for the percyng, they saye: is caused of the exceeding moistnes, of which qualitie both partes doe graunte that it is. Concerning the generation, some haue sayde that it is pure and elementall water, some agayne hath thought, that it droppeth out of heauen, and is a part of the heauenly substaunce. And other sayde, that it is generated in the cloudes, and falleth downe in the field, in a circle, on those round circles, which are seen in many fieldes, that ignoraunt people affirme to be the rynges of the fayries dances. It is certayne, that quick syluer hath dyuerse tymes fallen out of the cloudes, as we haue declared in the  
treatise

treatyse of wonderfull and merueylous  
rayne, but whether it so fall in circles, it  
is doubtfull. The moste probable opi-  
nion is, that it is generated of moyste  
vapors of the earth, coated by cold, much  
lyke to water, as bymstone is of hotte  
fumes coated by colde, muche lyke to  
sper. And thus muche of metalles.

¶ Of Stones.

**S**Tones the fourth kynde of earthlye *Stones.*  
myxed bodies, haue two maner of ge-  
nerations, by moste contrarie qualities.  
For heate doth harden moyst bodyes in  
to stones, as we see that of claye it ma-  
keth exccadyng harde byrcke.

Also the thōderboltes in the cloudes,  
are generated by heate, as befoze hath  
ben shewed. But colde dothe by conge-  
lyng, generate, many moze stones then  
heate doth: for the moste parte of all the  
stones that are digged out of the earth,  
are generated by colde, whiche is able  
to conuerte any other kynde of myxed  
substaunce into stone, as hath been part-  
ly shewed in the nature of welles, and  
sprynges, of whiche there be some in  
Englande, whiche by their colde turne  
wodde or any lyke thyng into stones. I



# A G O O D L T

have seen a piece of rotten wodde, which  
to sight was very light, and like wodde,  
but in handling a very stooone that was  
taken out of suche a well. Also of other  
thynges taken out of the earth turned  
into stenes, I have seen and founde my  
selfe, eyes, with heade and wynges,  
very harde stenes, also I have seen an  
hart, a byrds tongue, a beastes stone, a  
peare, a plomme, & dyuerse other things  
turned into hard stenes.

*Of the diuers kinds of stenes.*

*Rockes.  
Pebles.*

**S**Tones may first be deuided into rude  
and be wtifull, the rude containe those  
great rockes, whiche are generated by  
many smal partes ioyned together, and  
the commen peble stenes, that be found  
euery where in the earthe, among gra  
uell & on the shore of the sea, or bankes  
of the ryuers. These are generated of  
grosse and earthly humors, congeled by  
colde, and because they be neyther fayre  
of collour, nor through shynning and also  
commen, they are contemptible. The  
fayre or be wtifull stenes be either great  
or small. The great be, as marble of di  
uerse kyndes, & collores, alabastrer & suche  
lyke which being hart & well connected,

*Marble.*

may

may be polished & becom bewittful. Their  
colloz is as they are mixed, being uncon-  
geled, so is their purenes. The small are  
more pretius, and they be either thick or  
pellucide. The thicke, be nether so fayre  
nor so pretius, as the *Achates*, the *Lasper*,  
*Prassios* &c. These consistng of a pure mat-  
ter & not very watry, are congeled into  
such stones. The clear stones be liquozs  
concreet, as the *Diamond*, the *Saphir*, the  
*Emeralde*, &c. they are praysed of their gret-  
nes, hardnes, clearnes, & faire colloz,  
of which, enough hath been spoken. Sa-  
ying that som be of opinion, y these be  
generated by heat, because y best are found  
in whot countries, in y east, & in y south.  
Answer may be made, y the whotter y  
ayze is the colder is the earth, so that rea-  
son is of smal force.

*Achates*  
*Lasper.*  
*Prassios.*

*Diamond*  
*Saphir,*  
*Emerald*  
*The praise*  
*of preci*  
*us stones.*

¶ *Of the vertue of stones.*

Some perchance, would loke that we  
shold make a long discourse of y vertue  
of stones, & wold be well content that we  
shold entreate of diuerse pperties of gem-  
mes and pretious stones. Which matter  
though it be out of our purpose (whiche  
considereth only y generatiō) yet seing it  
is not out of their expectatiō som thing  
brievely & yet

*The ver-*  
*ue of*  
*stones.*



# A GOODLY

sufficiently shalbe saide, of the vertue of  
stones.

**The ver-** That vertue that is ascribed vnto  
**ue of stones** them, is eyther naturall or magicall.  
**ues either** Natural vertue is either that whiche is  
**natural or** known to haue a naturall cause, or a  
**magicall,** naturall effect, as the *Magnes*, or loaden  
stone to drawe iron, whiche is by a simi-  
litude of nature, and suche an appetite,  
as is betwene the male and the female.

**Magnes.** Also the sayde *Magnes*, moueth towarde  
the North, and as some saye, there is an  
other kynde founde in the South, that  
draweth towarde the south. They saye,  
that there is great hylles of this stone,  
in the North and South, which maketh  
it looke that waye.

Other byng a *Mathematicall* reason,  
whiche because it is more curius then  
can be vnderstande of the common sort,  
not exercised in *Geometrie*, I omitte.

**Gett and** The gette and amber draw beares,  
**amber draw** chaffe, and lyke light matter, but beyng  
**with chaf** befoze chaffed, for heate is an active.

**Astroites** Also the precious stone called *Astroites*  
**a stonemotes,** moueth of it self in vineger, the shar-  
**ueth in** penes of the vineger, percing it, and the  
**maye** layer excluded, driving it forward. These  
vertues

vertues because I haue seen, I haue set  
 for an example, generally all other lyke  
 naturall vertues, proceade of lyke natu-  
 rall causes, which by their effect the in-  
 genious must seeke to synde out. As for  
 Magicall vertues be they, whiche are  
 grounded of no reason, or natural cause  
 whiche if they take effect, it is rather of  
 the superstition & credulitie of hym that  
 vseth them, then of the vertue of the  
 stones. As that an Emerald encreaseth  
 loue, a Saphir fauoure, a Diamonds  
 strength, & suche lyke vertues of whiche

*Albertus* in his age surnamed the great, *Albertus*  
 toke paynes to wyte a booke, whiche I *Magnus.*  
 suppose be englished. To conclude with  
 the cause why stones melte not as met-  
 talles doe, may be gathered by y<sup>e</sup> which  
 hath been sayde befoze, because they are  
 congeled past that degree, & also because

there is left in them no vntuas, or  
 clammy matter. Let this suffice

for stones, & so the whole

purpose is at  
 an ende.

(. .)

FINIS.

W. F.





